

Bob Cooper's

JUNE 15 2004

SatFACTS

MONTHLY



Reporting on "The World" of satellite television in the Pacific and Asia

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**FTA: nearly 300
channels
in NZ & Aust**

**DVB-T:
a pad can save
your day!**

**Fiji TV:
On Schedule for
July 1st start?**

- ✓ Latest Programmer News
- ✓ Latest Hardware News
- ✓ We have AMC10!
- ✓ Observer Reports

Vol. 9 ♦ No. 118
Price Per Copy:
NZ\$10/A\$11/US\$/Eur8





Phoenix Technologies

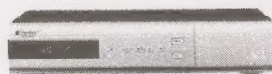


Satellite Equipment & Accessories One Stop Supermarket

Phoenix JT3100T Digital Terrestrial Receiver

- Digital Audio Output (S/PDIF)
- Dolby Digital
- Wide Screen (16:9) Hot-Key
- S-VHS, CVBS & RGB Video Outputs

Magix 8800 Receiver
(Made in Korea)



- Super-Fast Channel Scan
- Electronic Program Guide
- Channel Rename Function
- Software Upgradeable

\$180/each (for 6 unit)

\$160/each (for 30 units)

Coship digital receiver
(Iredto V2.09 CAM embedded)

\$220

SPACE 5300A CI Receiver
(Two Common Interface Slots)

\$220

Auto PID correction
C & Ku band input
PAL/NTSC auto converter
5000 channels
Picture in picture EPG
DiSEqC1.0/1.2 control
TV/VCR Scart & RCA output

\$180

NextWave 3220 FTA digital receiver
(Made in Korea)

C & Ku band input, PAL/NTSC auto converter
5000 channels Picture in picture EPG
DiSEqC1.0/1.2 control
TV/VCR Scart & RCA outputs

\$160

NextWave 3220C digital receiver
(Two common interface slots) (Made in Korea)

C & Ku band input
High symbol rate >45,000
PAL/NTSC auto converter
5000 channels Picture in picture EPG
DiSEqC1.0/1.2 control
TV/VCR Scart & RCA outputs

\$220

Optus C1 Aurora Kit
Coship digital receiver

(Iredto cam embedded)
11.3 GHz/Universal Ku
LNBF, 75cm dish, Mount
bracket.

\$315/set

+Aurora card \$75

LBC, ART, Al Jazeera Kit
Coship digital receiver

(Iredto cam embedded)
C-band LNBF, 2.3m
Mesh dish.

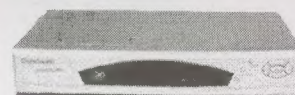
\$435/set

+Subscription fee
\$20/month*

Free to air kit (for NSS 6, Optus B3)

Including dish, LNBF,
digital receiver, etc.

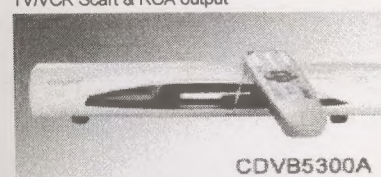
**Start from
\$250/set**



Changhong 1000 Digital Receiver
Aston 1.05 Cam embedded

Best Value For Indian & French
(C-band on Asiasat 3s & Ku
band on Intelsat 701)
C & Ku band input, 2000
Channels.

\$170



CDVB5300A

SPACE 2300 digital receiver

Auto PID correction
C & Ku band input
PAL/NTSC auto converter
5000 channels
Picture in picture EPG
DiSEqC1.0/1.2 control
TV/VCR Scart & RCA output

\$140

Iredto 2.06B CAM	\$140	Zinwell C band LNBF	\$35
Viaccess CAM	\$140	Zinwell 10.70/11.3	\$25
65cm offset dish	\$27	Universal Ku band LNBF	\$25
75cm offset dish	\$40	MTI C band LNBF	\$35
Superjack DiSEqC 1.2 motor	\$95	One cable solution C-band LNBF	\$50
Universal Mount	\$15	Satellite finder	\$30
2.1m mesh dish	\$120	Silver Card (10/bag)	\$125
2.3m mesh dish (motorized)	\$170	Gold Card (10/bag)	\$85
2.4m heavy duty mesh dish (motorized)	\$210	RG6 Stripper	\$20
1.8m 6 panel dish	\$130	RG6/11 Crimper	\$30
RG 6 Dual cable (305m/roll)	\$75	Angle meter (made in USA)	\$85
		Compass	\$30

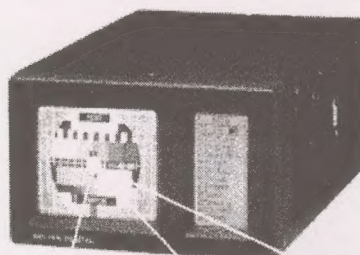
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- Tunable sound 5.5-8.5 MHz
- Spectrum analyzer
- Expanded spectrum
- LNB voltage 13/18 V
- 22 kHz tone switch
- KU- and C-band (normal/inverted video)
- Built in rechargeable battery
- Only 3.5 kg complete with carrying-case

Satlook Digital NIT \$1550

We are pleased to introduce our new SATLOOK Digital NIT. NIT stands for NETWORK INFORMATION TABLE, which today almost all DVB-satellites transmit as standard. The NIT contains information about the Satellite and TV/Radio-channels. It's very easy to identify a Satellite when reading out this information. The different TV/Radio-channels on a transponder can also be read-out.



Satlook COMBO \$2550

- Input frequency: 2-900 MHz and 920-2150 MHz
- 4.5" B/W Monitor for PAL/NTSC/SECAM
- Lots of memory positions for spectrum pictures
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TV-PART:

- 2-900 MHz spectrum analyzer
- Presents full range spectrum (and expanded)
- Very high accuracy, $\pm 1\text{dB}$ (at 20°C)

SAT-part:

- 920-2150MHz spectrum analyzer. Digital BER, QPSK and S/N-ratio
- Satellite-ID and TV/Radio-channel info (NIT)
- Tunable audio bandwidth 5.5-8.5MHz
- LNB voltage 13/18V, 22kHz tone switch
- DiSEqC according to level 1.0, 1.1, 1.2
- KU- and C-band (normal/inverted video)

Full range of C/Ku band satellite dish - panel & mesh, prime & offset, from 45cm to 4.5m

Full range of Zinwell, MTI C/Ku LNBF - Dual output, one cable solution, C/Ku combination

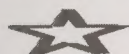
Full range of actuator - From 12" light to 36" heavy duty

DiSEqC 1.2 Positioner & SupperJack EZ2000 Positioner

2.4 GHz AV sender and Remote extender

RG6 Cable and Motor cable

Full range of satellite accessories



THIS MONTH SPECIAL



SPACE 2300A FTA Digital Receiver \$1300/(10 units)

Magix 8800 Digital Receiver \$1200/(6 units)

Phoenix 2.3m Mesh dish \$1650/(pallet of 10 sets)

Zinwell LNBF 15K C-band LNBF \$648/(box of 24 units)

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This publication is dedicated to the premise that as we enter the 21st century, ancient 20th century notions concerning borders and boundaries no longer define a person's horizon. In the air, all around you, are microwave signals carrying messages of entertainment, information and education. These messages are available to anyone willing to install appropriate receiving equipment and, where applicable, pay a monthly or annual fee to receive the content of these messages in the privacy of their own home. Welcome to the 21st century - a world without borders, a world without boundaries.

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our TENTH year!

COOP'S COMMENT

How many free to air TV and radio channels can you expect to receive with, say, a C-band 3 metre dish in Australia or New Zealand? In Australia, the number lays between 250 and 300 channels while in NZ it exceeds 200 channels. There are some basic requirements:

- 1/ 3 metre size dish
- 2/ Polar format antenna mount
- 3/ Suitable motor drive
- 4/ Ability to fine tune polarity of dish/LNB feed
- 5/ "Blind Search" routine built-into the receiver - to locate and lock onto and provide from memory everything "out there."

We turned part-time helper Gary loose on this question during May using a brand-new, just out of the box, Satwork blind search receiver. Gary went through our entire satellite belt from As2/100.5E to I701/180E, on both polarisations, and allowed the Satwork 3688 to locate and log everything it could find with a 3 metre dish as the search antenna. Yes, there are "better" (we believe) blind search receivers available - from Innovia, Coship and others - but this was to be a search which anyone with even a low-cost receiver could duplicate.

New Zealand is "at the end of the line" for this type of activity - two important satellites (As2 at 100.5E and As3S at 105.5E) are for many in this country hidden behind hills, trees or buildings - close to the western horizon. But for Australian locations, these plus other satellites even further west (such as ChinaSat, Thaicom 2/3) are above the horizon. So where our horizon stopped - at 100.5E - Australians would keep on trucking and add 50+ channels to our own lists. New Zealand is "worst case" for the Pacific (setting aside Tonga, Samoa and Fiji where even As2 and As3S may "disappear" over the horizon).

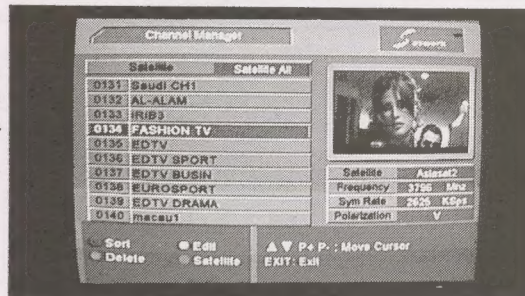
What Gary reveals, starting on p. 14 here, is that "even in New Zealand" a 3 metre dish (which is not that outlandish for a private, consumer, user) will create a very significant number of free to air (FTA) channels. Which makes a mockery of the C-band hardware sales world in New Zealand. Not one firm routinely stocks for next-day delivery 3 metre C-band antennas, feeds and LNBs, Not one. Australia is better, but only marginally. So we have 200-250-300 FTA TV channels available for the watching and virtually nobody in the "commercial world" even offers the equipment to do this? What has happened to us, as an industry? 200+ channels and not one firm stocks (or will offer even on "custom order") the equipment to do this?

Ku's simplicity is part of the answer. A small dish (65/80/90cm) offers through Globecast some of the more popular channels. But what about the dozen-plus Mandarin Chinese only on C-band. Or the dozen-plus Cantonese Chinese? What about the 30+ English language services, only or mostly on C, including sports (Star Sports Asia, for example plus Dubai's sport channel) or the English language movies (RCTI, MATV and others)?

C-band - forgotten? So it appears at a time when even a 2.1m or 2.4m mesh dish will produce several hundred channels of reception. If you sell dish systems, turn to p. 14 and check out our list of Gary's FTA services found with a modest 3 metre dish in NZ. Add 50+ channels if you are in Australia and then think about the sales you are missing!



June 15, 2004



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-On the cover-

C-band FTA with a 3 metre dish? Glenys, who assists on "mailing day" to get you your SF, demonstrates that the 3m antenna is not unacceptable for receiving 200+ free to air service channels - p. 14



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PROGRAMMER PROGRAMMING PROMOTION

UPDATE

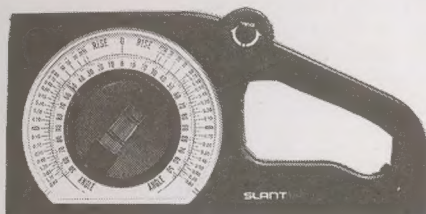
JUNE 15, 2004

Where is the horizon?

"I am living high up in the Coromandel Hills east of Auckland. During dish alignment, how are you supposed to determine the location of the ocean horizon when you are inland, behind hills, and cannot see it?"

RW, NZ

Where the ocean horizon might be is immaterial unless you can actually "see" it. Satellite signals will not penetrate the hills so your horizon is determined by the ridge or top of the hills in any specified azimuth direction. Lay a carpenter's straight edge on a table so the bubble is centred and the straight edge points at the azimuth angle you are seeking (such as 70 degrees east of north). Now, using a carpenter's angle finder resting on top of the straight edge, adjust the angle finder until you site along its pointer line to just clear any obstructions along your azimuth angle pathway. Read the bubble-adjusted angle of elevation (slope, slant) from the angle finder dial and you now know the limits of your visual (satellite receiving) horizon in that particular azimuth heading.



FREE "T" shirts???

"I am a former Senior Cable TV Technician here in PNG and have gone into business for myself. What I request is SatFACTS posters, T shirts, stickers so that I can advertise your excellent publication here in PNG."

Sam Vinis, Satellite Scan Service,
Mount Hagen, Papua New Guinea

SatFACTS does not supply posters, stickers or T shirts but perhaps we should. What do readers think? No, they would not be "free."

DVB-T's future

"The terrestrial DVB-T antenna job report (SF#117) was great! I believe I have one of those antennas - bought on Gold Coast 15 years ago! Might be a copy but looks exactly the same."

PM, Victoria

Fiji TV construction. Engineers from Megahertz group on site late in May, dish and container with new uplink electronics expected as you read this, all pointing towards testing before 1 July and first commercial service that date (NSS-5, spot beam 2 as shown p. 6, SF#117), using Nagra CA.

RAI from AsiaSat 2 to go CA? Announcement from World Media International claiming it has purchased "exclusive rights" to RAI TV carried FTA through As2 within European Bouquet sounds menacing. ALL Euro Bouquet programme channels are FTA, that is one of the "rules" each agreed to when signing on board with the DW managed transponder. MCM (French music channel) was forced to abandon Euro Bouquet when it decided to cease FTA in favour of CA format. World Media claims it will turn RAI's As2 service from FTA to CA "within a few weeks." They also operate PAS-2 Middle East bouquet including ART, LBC, RAI and Aljazeera (subscription cards available through Strong Technologies; tel 61-3-8795 7990) and have a history of converting FTAs to CA and becoming exclusive agents for CA service - not unlike TARBS. It all comes down to exclusivity - Italians in Australia (and Pacific) have been stubborn about agreeing to take PAS-2 service as long as As2 remained FTA. So - by eliminating the As2 FTA - they force folks to become CA their customers. Or, go to TARBS!

Perth Channel 31 finally "P5!" Well, almost. Perth's terrestrial channel 31 service has increased radiated power to 8 kW (a "dB increase" of around 10 dB), soon to be 12 kW and received a permanent 5-year license. New "sponsors" are coming on board, plans are underway to arrange satellite fed links to (new) terrestrial repeater transmitters at several WA locations. Service is carried by Perth's Westlink as a part of the Aurora service (channel 23, sandwiched between GWN-22 and WIN-24; 12.527Vt, Sr 30.000, 3/4 on NA beam), presently Thursday nights, then Friday nights through Sunday night. Service is automatically authorised with Aurora card for ABC/SBS (available nation-wide; Irdeto Version 1 + MCrypt).

This one is lots of fun. Go to <http://www.wrightsaerials.tv/index.html> for an incredibly fun and educational tour of TV/FM/satellite antenna installations in the UK. The photography is superb, the anecdotes under each photo spot-on, and in the process you will learn more about TV aerals than you ever thought possible. Also check out "Aerial Issues" + "You must be joking" + "Directional Coaxial Cable" and then contact Garry Cratt (AV-COMM) and Peter Lacey (Laceys.tv) to see if you can buy some of this stuff!

It had to happen. UK's "Freeview" DTT service growing by adding pay-to-view channels under brand name "Top-Up TV." First channel available - one guess: TVX, an "adult" channel at 10 pounds per month!

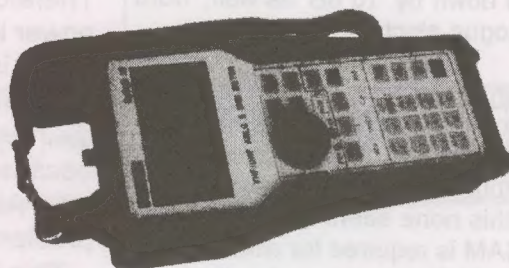
It's all in hand.

No matter which you need, Laceys.tv has a better TV measurement answer that we'd like to put in your hands.

Features go beyond true Bit Error Rate and fully calibrated Modulation Error Ratio, view of the levels of any seven channels simultaneously, comprehensive data logging, Spectrum and Expanded Spectrum.

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Satellite Terrestrial Cable Digital Analogue

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DTT transmitter powers

"Regarding 'how much power' is required for an existing analogue TV station to duplicate in digital its existing analogue coverage area. We don't know all of the answers, yet, but the original rule of thumb ('10 dB less DTT power than analogue power') seems to be working out at UHF (bands IV/V) although possibly not as well at high band VHF (band III) and definitely not as hoped at low-band VHF (band I). Harris, a major supplier of DTT transmitters, gets US\$100,000 for a 1,000 watt transmitter/antenna package while a 400,000 watt UHF version sets the buyer back over US\$600,000 - plus installation costs. VHF power levels are lower (by 10 dB) so the package costs are slightly lower there. Another factor to keep in mind is operating costs. The (USA) rule of thumb is that for every watt transmitted the broadcaster pays around 50 (US) cents per year; a 1,000,000 watt rig rings up (US)\$500,000 every 12 months just for operating electricity. With a 10 dB decrease in transmitter power required, the broadcasters are expecting/hoping to see their power bills go down by '10 dB' as well; 1/3rd of analogue electricity costs."

DSmith, USA

Mission statement

"Some advertisements say that (some) receivers can be supplied with CAMs but when you ask the supplier about this none seem willing to share what CAM is required for what service using which receiver. Is there a source where one can study the different types of CAMs? On p. 12 SF#116 you mentioned ESPN on PAS-8 4020H has unencrypted audio. Is there a source for a receiver to receive the video portion? Your SatFACTS is a unique source of information not easily available anywhere else. Perhaps the mission statement should read, 'Knowledge is the rare commodity which you can give away and still keep it!'"

Kari Jortikka, Victoria

SF#102 (Rolf Deubel's "Which CAM is the right CAM?") is suggested along with SF#97 (Deubel again - "Turning FatCAMs into MultiCAMs"; see p. 32 here). ESPN full service (V+A) is ONLY available to commercial clients and at last report they had a monthly minimum in region of US\$1,000 to keep the small guys out of the loop. Mission statement? "Get it done before Alzheimer takes over!"

HARDWARE EQUIPMENT PARTS

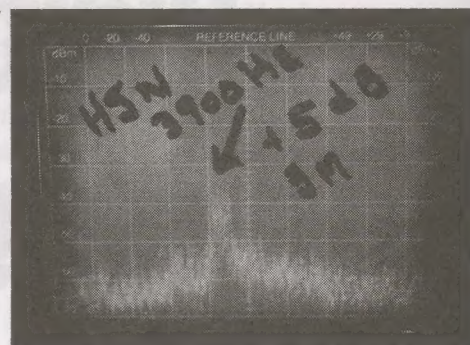
UPDATE

JUNE 15, 2004

DVB-T/DTT transmitter power levels. If you display a terrestrial digital transmission on a spectrum analyser, it is familiar to those with a satellite background; steep skirts/sides, a more or less flat top with the displayed level constant (non-varying) over time. Analogue transmissions look totally different - up to three primary "spikes" shooting up from the noise floor with plenty of dancing sub-spike activity especially around the video carrier as the content of the image being transmitted varies. Analogue transmitters are rated at "peak power" which defines the maximum allowed radiated signal when all of the spikes are (because of transmitted content) at their maximum. DVB-T/DTT power is rated at "average" which is a constant because the programming content of the transmission does not affect the height of the flat topped display. DVB-T/DTT typically requires a minimum RF C/NR (carrier to noise ratio) in the region of 20 dB for a decoder/TV set to lock on the transmission. When it does lock, there is instant 50+ dB video signal to noise ratio on the screen. Analogue requires 48 dB or better RF S/NR (signal to noise ratio) to create an image with approximately 45 dB video S/NR. Therefore, DVB-T/DTT transmitters are able to operate at lower power levels because at the receiver as much as 25 dB less signal is required to produce a quality image. Most DVB-T/DTT terrestrial transmitters operate at 1/10th the power (-10 dB) as their analogue companion transmitters rather than -25 dB because digital has its own internal threshold points to contend with. All of this should work as planned but alas there are problems not anticipated as we see starting on p. 6, here.

This is progress? Just when you may have thought new innovations in the area of MPEG-2 (DVB-S) had plateaux, here it comes again. A new standard for satellite digital video - DVB-S2. Currently, DVB-S assigns a fixed S_r (symbol rate) and FEC for each SCPC or MCPC transmission. S2 will change that - individual *programme* (data) streams will be capable of their own, unique, S_r and FECs - and FEC under S2 will range from 1/4 to 9/10 (!). Why? To cram more programming material into available SCPC/MCPC (muxes) - either as additional programme channels or as higher definition channels (HDTV). Alas, existing IRDs will have to be replaced with newer S2 capable versions before a SCPC/MCPC transmission using S2 can be received. And today there are no decoder processing chips yet available to do this. Hang tight - 2005 will be the year for S2's debut.

We have AMC10! The new American RCA satellite at 135W is very promising in NZ as we report on p. 31 here. More folks need to look!



JOYSAT

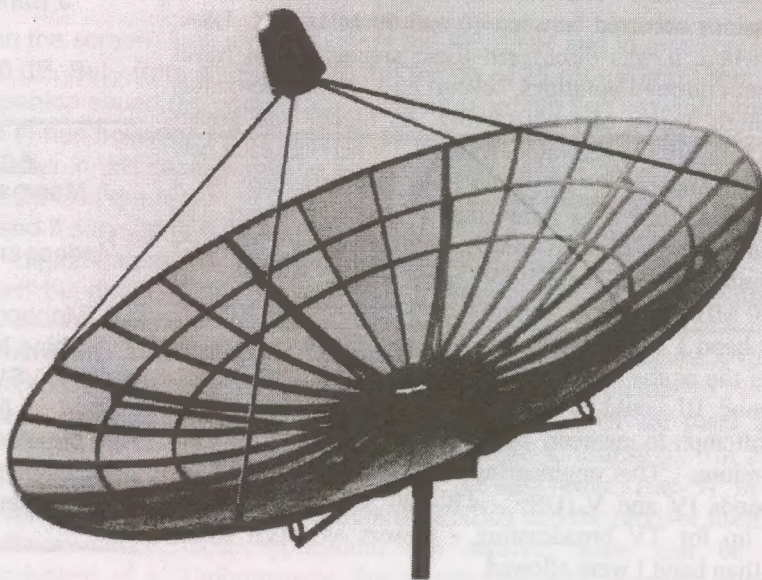
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GHz**
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dark green**



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Interested in **USA DIRECT** reception?

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make this work for you!

DTT on band I channels proving especially irksome

Band I TV channels (45 - 68 MHz, New Zealand; 45- 108 MHz, Australia) were originally the "workhorses" of the TV transmission band. The earliest all-electronic mode TV transmissions occurred between 40 and 50 MHz (UK, USA; 1930s) where it was discovered these signals would travel (propagate) through buildings, beyond hills, across mountains with a high degree of predictability. As higher and higher frequencies were pressed into terrestrial TV service, each new increase in operating frequency was accompanied by a measurable decrease in TV transmitter coverage (range). The spectrum planners tried to compensate for higher frequency shortcomings by allowing TV transmitters in band III (174-230 MHz region) to operate with 3 times as much power as their band I counterparts. In dB terms, 3 times as much power is the equivalent 5 dB more "power" put into the air. What band III could not duplicate in band I coverage, it would attempt to makeup by having more "force" to the transmissions. This engineering "correction" would follow when bands IV and V (UHF - 470-900 MHz region) were opened up for TV broadcasting - powers as much as 50 greater than band I were allowed.

But these were analogue days - where even low signal to noise (interference) ratios still produced watchable if not high quality TV images on the screen. An analogue signal barely 25 dB stronger than background noise could (can) still be viewed, even if the image was/is several steps left of pristine. DTT (digital terrestrial television) was an entirely new experience. Some basic numbers.

While we generally think in terms of RF (radio frequency) signal to noise ratios as a measurement tool, the real tool is the end result *video* (not RF) signal to noise. A 40 dB S/NR (signal to noise ratio) with an analogue TV signal is reasonably good quality - P4 in satellite analogue terms (no objectionable artefacts, some "grain" or fine dot noise apparent on close inspection). A P5 (nothing wrong at all!) signal usually requires an RF S/NR in the region of 48 dB. If you measure the RF S/NR and find 40 dB of signal over the noise, and then measure the video (image stream provided to

Band I is 45 to 88 MHz

- ✓ Band I largely abandoned in Europe
- ✓ Band I still used in Australia (21 locations) and New Zealand (87 locations)
- ✓ Band I in Asia is 47 to 88 MHz
- ✓ Band I in USA is 54 - 88 MHz

Against Band I use for DTV Terrestrial

- ✓ Manmade background noise is growing at 3% per year and compounding
- ✓ Indoor antennas have a natural physics-limited poor impedance match at Band I
- ✓ "Monopole" (single rod) set-top or in-built antennas combine low carrier to noise ratios (poor pickup) with high VSWR (impedance match) raising the "noise figure" of the TV set's input circuits
- ✓ Consumer products including plasma TV displays to electric blankets have become new-frontier generators of Band I background noise

40 dB of
analogue

(quality image)

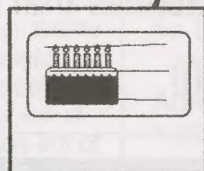
25 dB of
analogue

(watchable image)

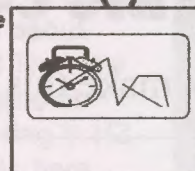
background
noise level

the display screen) S/NR it will be in the region of 38 dB. And if the RF S/NR is 48 dB (an artefact free analogue service), the video S/NR will hover in the region of 46 dB. Meanwhile, back at the studio where the video image originated, the camera generating the picture has a video S/NR in the range of 56 dB. So there is, even with the best of analogue reception conditions, significant degradation of the

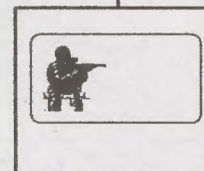
Monopole: Totally unacceptable
VHF Band I; high VSWR, high
noise pickup

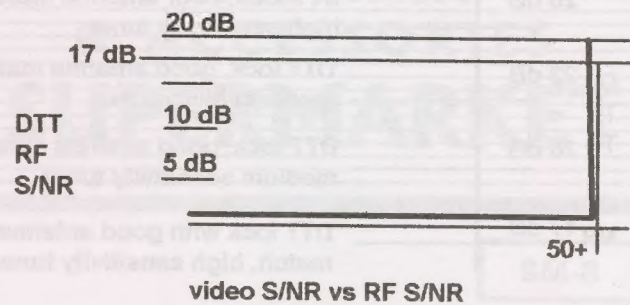
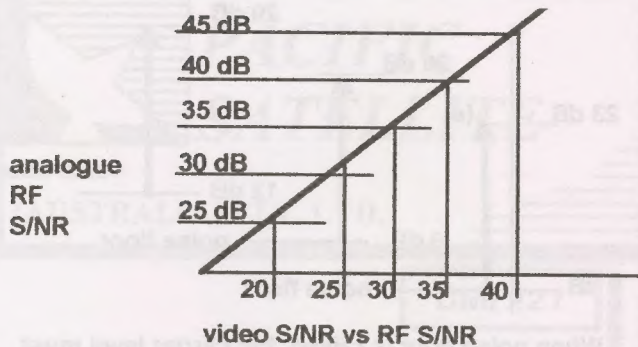


Dipole (rabbit ears); 90% of locations unacceptable



Rooftop antenna:
Sensitive to
exterior
interference





Analogue's video S/NR (what you see on the screen) lags slightly behind the RF S/NR and in an exceptional receiving system will top out around 50 dB. But - from a RF S/NR in the region of 25 dB upward there is a viewable image on the screen and companion sound (someone really desperate would find viewing possible down to a RF S/NR of 15 dB). Digital (DTT) has **no** video S/NR until the tuner-receiver's threshold is reached - 17 dB C/NR (the "C" stands for digital carrier in this case) would be an exceptionally high quality (DTT) tuner while more often the tuner/receiver threshold is in the region of 20-23 dB C/NR. When threshold is attained, the video S/NR **instantly** is 50 dB or better and it stays at that same number even if the C/NR rises dramatically - say to 30 dB. In the satellite TV world, "digital threshold" is nominally in the region of 6 to 9 dB C/NR - not because satellite receivers are "better" but due to the difference digital format employed for satellite.

video even with 48 dB S/NR. Moreover, it is never possible to attain the same *video* S/NR at an analogue reception point as the original camera produced - no matter how much RF S/NR you create. *Never.*

Enter the DTT digital world. All digital formats (whether satellite or terrestrial) employ a method of correcting for errors in the reception. And inherent in the software routine that identifies an error and fixes it is the equivalent of a "counter" - a mathematical technique that monitors full time the number of errors in the received data stream packet. And also in the software is a "threshold point." This is the system that determines whether the software is capable of correcting the errors. When the error-count is too high, there is no image (resulting in the fabled 'blue screen'). When the error count is low enough to allow the FEC (forward error correction) software to "fix" the errors, you have reception.

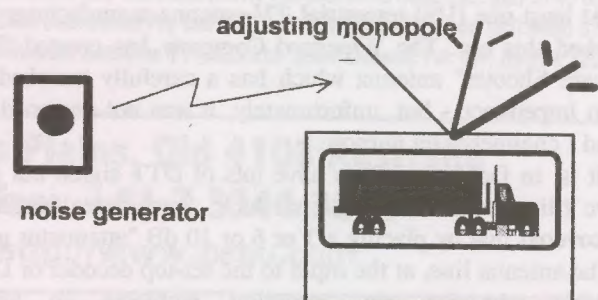
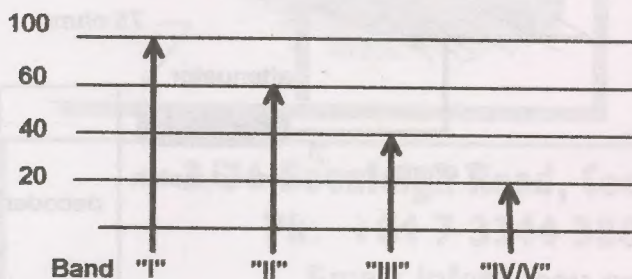
In a satellite digital system, the threshold point varies with the FEC "rate" - FEC 1/2 is more "robust" (quicker to produce a picture) than a FEC of 7/8, for example. Therefore in your standard digital satellite receiver, a SCPC or MCPC data stream with FEC 1/2 might well "lock" and produce images with a C/NR (carrier to noise ratio) as low as 6 dB while the exact same receiver processing a FEC 7/8

SCPC/MCPC data stream could easily require a C/NR of 9 dB. The threshold is totally dependent on the FEC.

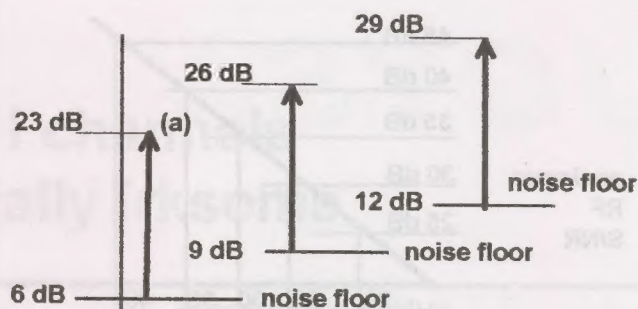
So too with DTT/digital terrestrial but there are other elements at play here - unique to terrestrial. In a satellite digital reception system, the only "noise" (the "N" in C/NR or S/NR) comes from the LNB(f) and the receiver itself, and for most applications the receiver noise can be ignored. Unfortunately, this is not true with terrestrial digital. The bulk of the "N" in terrestrial originates from manmade devices, such as internal combustion engines, power lines, light dimmer switches, fish tank heaters. Just walk through the appliance section of any store and virtually every device for sale generates "radio spectrum noise" when it operates. And that noise creates a "floor" or threshold point which the terrestrial signal must overcome.

An indoor (set top) reception antenna has three negatives. (1) the position of the antenna, interior to a building, results in less signal from the transmitter (building walls, wiring attenuate the signal). (2) the distance or "phase" between the set-top antenna and the noise source(s) varies as the antenna is repositioned causing noise source signal levels to rise and fall with each adjustment. (3) the set-top antenna is at best an inefficient compromise. The length of the rod (or rods)

Man generated noise reduces as the TV channel frequency increases. Nominally, there is 80% less noise at bands IV/V than at band I. When the reception antenna is moved or adjusted in location, two things are happening: (1) the amount of received signal varies (+ and -) and (2) the "phase" or position of the antenna vis-à-vis unwanted noise changes causing the "N" in the equation to rise and lower with each adjustment.



	26 dB	DTT lock, poor antenna match high sensitivity tuner
D	23 dB	DTT lock, good antenna match low sensitivity tuner
T	20 dB	DTT lock, good antenna match medium sensitivity tuner
C/ NR	17 dB	DTT lock with good antenna match, high sensitivity tuner



When noise floor is raised, the carrier level must also increase to maintain adequate C/NR.

There are four elements to successful lock of DTT signals. (1) The signal must be strong enough; (2) the DTT tuner or receiver must be sensitive enough; (3) the noise/interference floor must be low enough; and, (4) the "impedance match" between the tuner/receiver and the antenna must be good. That's it? Not quite - finally, the data stream must not be corrupted by multi-path errors that exceed the FEC's ability to correct.

determines how closely the monopole/rabbit ears (twin monopole) antenna "resonates" at the terrestrial frequency to be received. No - not one - monopole or twin-pole set-top antenna will in fact resonate at band I - the wavelengths at band I are physically longer than the "poles" resulting in a "too short" antenna with a bad "impedance match" to the decoder or TV set's tuner. You would, for example, never attempt to use a Ku band "feed" at C-band - it is simply not the correct physical dimension for the C-band signals. A mono/twin-pole set-top antenna is likewise too short/small to work at band I properly. That it works at all with analogue is because band I signals are the most robust of all TV frequency bands. But with DTT/terrestrial, the "impedance mismatch" of the set-top antenna is so severe that the tuner's internal threshold or noise barrier point rises rapidly. A set-top DTT tuner that would, in fact, produce "lock" when connected to an appropriate antenna producing 17-20 dB C/NR will typically require a C/NR in the region of 25 dB (or more) to lock with a mis-matched antenna. The effect of an impedance mismatched antenna is the system equivalent of raising the noise floor of the received signals (signals: the desired DTT plus the non-desired noise from manmade devices).

Mismatch - the enemy

Old timers in the satellite digital field will recall, not with fondness, the problems attached to trying to operate two (or more) MPEG-2 receivers (through a splitter) from one signal source; such as the European Bouquet. The tuners in early receivers (Hyundai, Panaset, SatCruiser) were very sensitive to impedance mismatches and five years back it was essential that any unused ports on a splitter be terminated with a 75 ohm terminator or the receivers functioned in an erratic manner. The present generation of terrestrial set-top boxes have similar "input-impedance" sensitive tuners.

At least one (US) terrestrial TV antenna manufacturer has worked this out. The Winegard Company has created "The Square Shooter" antenna which has a carefully matched 75 ohm impedance - but, unfortunately, it was not designed for band I channels - on purpose.

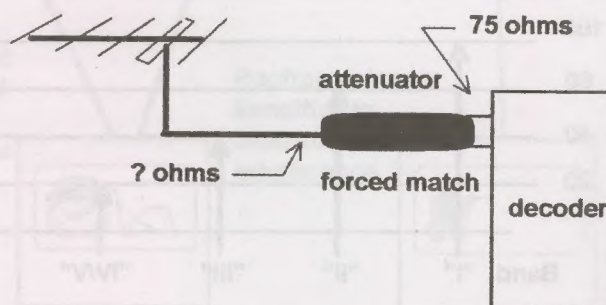
It is, in fact, possible to have lots of DTT signal but still have tiling or a lack of signal lock. Some installers have discovered that by placing a 3 or 6 or 10 dB "attenuator pad" in the antenna line, at the input to the set-top decoder or DTT capable television set, reception problems go away;

eliminated. Their explanation has been, "there was too much signal." While that remains a possibility, it is in most cases *not* the correct explanation for why placing a pad at the input to the decoder/TV set corrects the problem.

All set-top decoders (whether satellite or terrestrial) do indeed have a minimum input signal and a maximum input signal. The early generation tuners available to date have been skimpy on the minimum and generous on the maximum. So why, by adding an attenuator pad, do problems go away?

Mismatch. A pad, which reduces signal levels by the amount stated on the device (i.e. 3, 6, 10 or 20 dB) are resistive networks. They also do something rather magical - called "forced matching." When properly designed (as most are - this is not rocket science!), an inline attenuator creates a 75 ohm match at both the input and the output. In other words, screwed onto the decoder, it says "I am 75 ohms" which just happens to be the impedance at the input of the decoder's antenna input F connector. So when the attenuator inserts in the line between the antenna-downline and the decoder, it is making the decoder ("forcing it") to "see" a 75 ohm match. By "forcing" the 75 ohm match, the previously mismatched antenna system (antenna plus downline) suddenly becomes a 75 ohm device because the attenuator says that is what it is.

Does the attenuator "work" because it reduces the signal level? *Perhaps.* Does it work because it provides a "forced 75 ohm match" to the decoder/TV set? *More likely.* A 3 dB attenuator is not as good as a 6 dB to "force a match" but you have to juggle the attenuator value against the available signal level (too much attenuation will drop you below threshold which creates an entirely new set of problems!).





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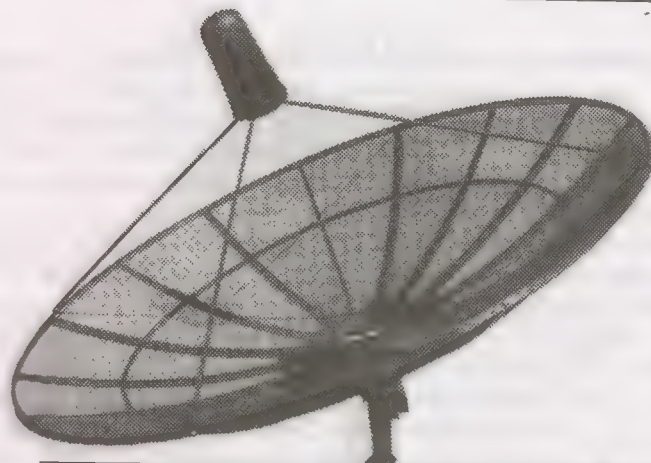
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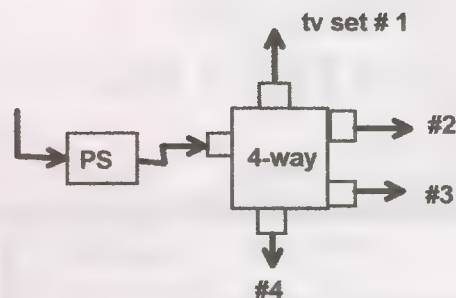
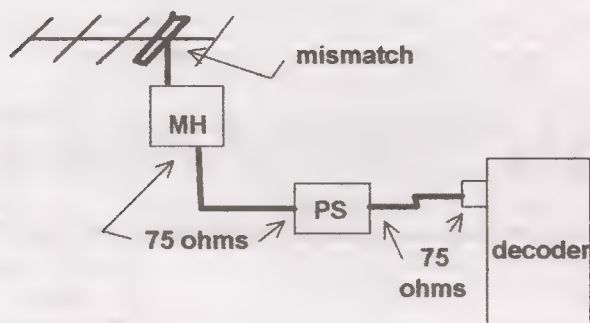
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Mismatch in the "system" is tolerable (although it *always* causes signal loss) provided that it does NOT occur on the final line into the decoder/DTT television set. A masthead amplifier and its companion power supply do a reasonably good job of maintaining a 75 ohm match and can usually be "trusted" to correct antenna mismatch. On the other hand, a masthead amplifier may not be the correct choice if you are installing a 2/3/4 + way split at the terminus of the amplified-antenna line to feed multiple TV receivers/decoders. See text.

Rule of thumb: Use the largest attenuator value that works without dropping the input to too low a level for decoding.

The amplifier conundrum

SatFACTS has previously warned that a masthead amplifier that passes-through both analogue and digital signals may not be a wise choice if the input signals are reasonably strong (such as +70-80 dBuV analogue and +60-70 dBuV digital). All masthead amplifiers have a relatively *low* "maximum output power" rating and when multiple analogue plus multiple digital signals pass through (are amplified) the "sum" of their individual "power levels" can exceed that rating. When that happens, digital signals develop high "bit error rates" caused by the stronger analogue signals "cross modulating" the weaker digital signals interior (inside of) the masthead. High bit error rates cause digital signals to UNlock even though the measured signal levels seem appropriate.

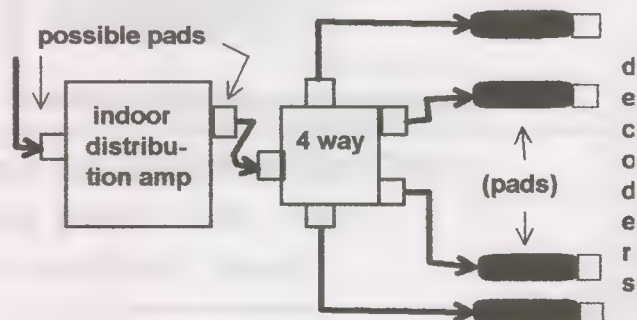
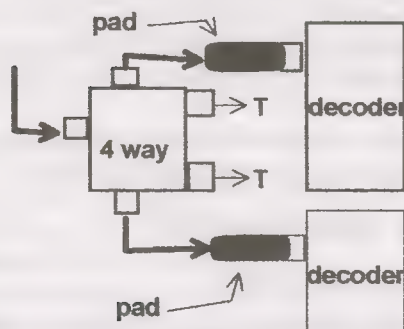
There *are* locations where a masthead amplifier is required. Here, the masthead provides its own "forced match" to 75 ohms from its input terminal onward (through the downline RG6, the masthead power supply and finally - where it counts - to the decoder/DTT television receiver). The "forced match" occurs at the antenna where (no surprise here) the antenna's impedance over bands I, III and where applicable IV and V varies widely (no, antennas that are rated "all channel" do not provide a uniform impedance match [75 ohms/300 ohms] through their full manufacturer rated bandwidth!). TV reception antennas, as The Winegard Company has

rediscovered, exhibit very erratic impedance through their channel range - something only marginally important with analogue but suddenly very important with digital. Some installers have "discovered" that by inserting a masthead into the antenna line, the digital pictures clean up. Because more signal is required for the decoders? Probably not; rather, back to impedance mismatch again. The masthead creates a forced match and now with it installed the decoder at the bottom end of the line suddenly has a "match impedance" entering the F connector. But - this only works when the analogue + digital signal levels do not "sum" (add up) to exceed the masthead amplifier's maximum rated output. No, sticking a pad/attenuator in the line after the masthead power supply will not cure this problem - the masthead itself is "overloaded" and an attenuator is akin to closing the barn door after the horse has escaped. *Too late.*

Indoor amplifiers may function well on some channels, not on others - a forced match pad at input and output will often cure the problem (below, right). Splitters may also have frequency-sensitive (OK some channels, not others) match problems - again, a forced match pad may cure.

Finally, the set-top decoders themselves often have a 75 ohm "match" only on *some* channels which means they see some channels as "matched" and others as UNmatched. Once again, having a selection of 3, 6, 10 dB inline pads in your kitbag can get you out of an unpleasant situation. Which, unfortunately, describes much of today's DTT world!

Splitters, if quality devices, are "75 ohm matched." Unfortunately, a percentage of available splitters, while claiming to be 75 ohms, are not - and a "forced match" pad is the answer at the input to the decoder. *Always* terminate (75 ohm terminating resistor) unused splitter ports (left hand diagram). Indoor distribution amplifiers that perform poorly on one or two channels (rest "OK") may require a forced match pad (right hand diagram).





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NEW ZEALAND (and Australia): FTA on a 3m C-band Dish

More than 290 FTA (free to air) TV and radio channels are available to a most New Zealand residents on C-band; another 20+ on Ku band (which is best done with a separate 0.9 to 1m offset dish). The breakdown totals - well, we found 137 FTA C-band TV services running in a day-long search and scan-log using a Satwork blind search receiver connected to a 3m dish in Northland (New Zealand).

The total number of viewable services surprised even us - and we keep the records and publish the monthly lists in our digital watch section (no, the handful of *analogue* FTAs on birds such as As3 are not included in our totals). Yes, a not insignificant percentage of the total appears on As2 (100.5E) and As3S (105.5E) and for some locations, this could be a difficult challenge. However, if you are threading in between buildings and trees that might otherwise block reception from one or both of these satellites, it is surprising how by moving the proposed dish location a few metres to one side or another (or elevating the dish to roofline) solves that problem. Short of being behind a ring of hills or a mountain to your west/northwest, most NZ locations will find As2 and if not at least As3S available provided you are "smart" in selecting your dish location.

The look angles for various geographic centres, to these elusive satellites, appears in a table below for New Zealand. Yes, they are "low" (as in - close to the horizon) but our own experience (near Kaitaia) with C-band signals down to virtually the horizon itself has been very good even for cable television carriage of the channels (cable users being more touchy about 'missing channels' than a private user). Further, both As2 and As3S are quite strong (some report good results even with 2.1m finely tuned C-band dishes). Alas, as we have verified, there is a very small margin of error - a sloppy dish is not in the running, even if 3m. Bottom line? Skill with the dish construction, installation and alignment is absolutely



HOW big is 3m? Well, it's certainly larger than Glenys can carry on her back (although we did not test that!) but on a scale of "monster dishes" this one is a toy. The mesh surface dishes are far less eye-visible and only a modest challenge to assemble from kit-box format. Good luck!

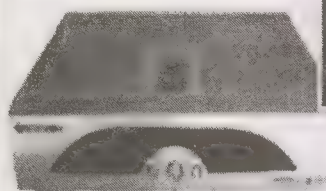
Location	Satellite	Elevation	Azimuth
Kaitaia	As2/100.5E	5.44 degrees	280.16 deg
Kaitaia	As3S/105.5E	9.53 degrees	283.28 deg
Auckland	As2/100.5E	4.14 degrees	278.98 deg
Auckland	As3S/105.5E	8.15 degrees	292.91 deg
Wellington	As2/100.5E	3.13 degrees	280.71 deg
Wellington	As3S/105.5E	3.31 degrees	280.71 deg
Greymouth	As2/100.5 E	5.56 degrees	283.31 deg
Greymouth	As3S/105.5E	9.21 degrees	286.96 deg
Christchurch	As2/100.5E	4.39 degrees	282.64 deg
Christchurch	As3S/105.5E	7.97 degrees	286.31 deg
Dunedin	As2/100.5E	5.34 degrees	284.71 deg
Dunedin	As3S.105.5E	8.76 degrees	288.56 deg

essential. If you are not capable of doing this on your own, contact one of the experienced installers (p. 29, here). For antennas, check with Craig Sutton (sutton@ihug.co.nz) who operates a web site (www.apsattv.com) which on occasion has second/third hand 3m and larger antennas for sale and of course Joysat (p. 5 here), Pacific Antennas (p. 9) and Pacific Antennas (2000) (p. 29). It all comes down to not "can you do it?" but rather, "how badly do you want to do it?" (1). They don't speak English!

Of course some do not. Even Deutsche Welle (Germany's As2 Euro Bouquet) channel limits English to 11 hours per day (12 German, 1 Spanish). But services such as MATV (action movies on As3S) and MTV China (PAS-8) still have

1/ One of our readers is an Iraqi living in Auckland suburb St Heliers. His location has LOS access to As2 and As3S whereas some Iraqi neighbours living within 500m do not. He receives channels from both which are redistributed to neighbours using 2.4 GHz WiFi video equipment. Where there is a will, there is a way!

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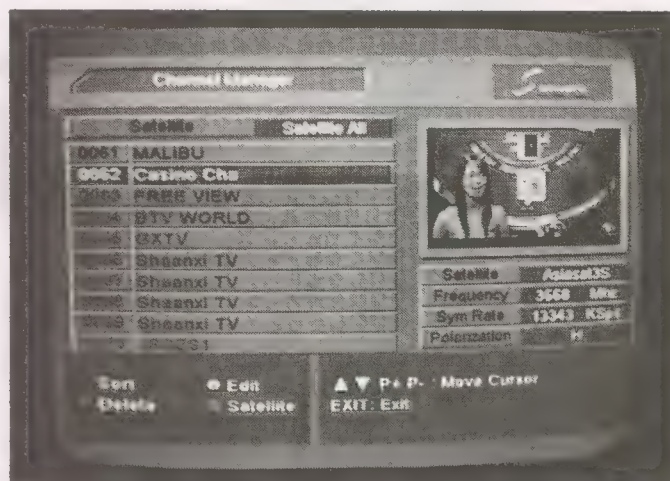
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a foundation in English and a viewing list that appeals even if you do not speak the original language of origin. Moreover, all around you are people who do speak the various languages, do worship at the various churches represented (yes - even Muslim) by the channels listed. Is it ethnic viewing? Yes, mostly. Is it totally uninteresting to those who speak only English? Not at all. Indus Music, for example, may be significantly Hindi but nobody in the world makes better, more complex, music videos than "Bollywood" (the Bombay/Mumbai eastern version of Hollywood). And we count 35 TV channels which carry English programming (including sport and movies) for at least a few hours per day - some 24/7. Additionally, of the 155 radio channels, more than 70 are English part of the day, all English or "language neutral" (such as the all-music without interruption channels on PAS-8, 3860Hz).

Ku-band FTA, whether New Zealand or Australia, is fun but terribly limited in its overall results. And most Australian locations will do as well with a 2.1 (or even 1.8) metre dish as the Kiwis do with 3m dishes further to the east. The bottom line is - *there is plenty of material out there for the taking!*



BLIND scan/search receiver from Satwork was used on each polarity (Vt and Hz on linear sats; RHC and LHC on Intelsats) to locate all FTA MPEG-2 digital services within access range of our 3m dish system. On each satellite, polarisation "skew" was adjusted for optimum performance at our Northern NZ receiving location.

Satellite	Our Mem #	Frequency	Service	Language	Polarity	Symbol Rate	FEC	Notes
AsiaSat 2 at 100.5E: 23 FTA TV services plus 58+ radio services								
As2	130	3,660	Kuwait Sp.	Arabic	V	27(.500)	3/4	
	131	3,660	Saudi Ch 1	Arabic	V	27(.500)	3/4	+5 radio
	132	3,660	Al Alam	Arabic	V	27(.500)	3/4	
	133	3,660	Irib	Arabic	V	27(.500)	3/4	
	129	3,706	Up 4	Mixed	V	4(.167)	3/4	APTN news
	134	3,796	FashionTV	English	V	2(.625)	3/4	
	90	3,880	Ch 1/VOA	English	H	20(.400)	1/2	+33 radio
	124	4,000	DW-TV	Eng/Ger/Sp	H	28(.125)	3/4	+20 radio
	125	4,000	TV5 Asie	French	H	28(.125)	3/4	
	126	4,000	RAI Int	Italian	H	28(.125)	3/4	see p. 1 here
	127	4,000	TVE	Spanish	H	28(.125)	3/4	
	128	4,000	RTPI	Portuguese	H	28(.125)	3/4	
	135	4,020	EDTV	Arabic	V	27(.500)	3/4	Dubai
	136	4,020	EDTV Sport	Eng/Arabic	V	27(.500)	3/4	
	137	4,020	EDTV Bus.	Eng/Arabic	V	27(.500)	3/4	
	138	4,020	EuroSport	English	V	27(.500)	3/4	
	139	4,020	EDTV dram	Arabic	V	27(.500)	3/4	
	140	4,148	Macau 1	Cant + Eng	V	11(.850)	3/4	
	141	4,148	Macau 2	Cantonese	V	11(.850)	3/4	occ svc
	142	4,148	Macau 3	Cantonese	V	11(.850)	3/4	
	142	4,148	Macau 4	Cantonese	V	11(.850)	3/4	
	143	4,148	Macau 5	Cantonese	V	11(.850)	3/4	
	144	4,148	Macau 6	Cantonese	V	11(.850)	3/4	
AsiaSat 3S at 105.5E: 64 FTA TV services plus 47 radio services								
As3S	60	3,668	Malibu TV	Eng/French	V	13(.333)	3/4	Trace TV
	61	3,668	Casino TV	English	V	13(.333)	3/4	

Satellite	Our Mem #	Frequency	Service	Language	Polarity	Symbol Rate	FEC	Notes
(As3S)	63	3,668	FreeView	English	V	13(.333)	3/4	Adlt Promo
	1	3,706	CNAI	Eng/PAL	H	6(.000)	3/4	
	2	3,706	CNAI	Eng/NTSC	H	6(.000)	3/4	
	47	3,743	SAB		V	3(.300)	3/4	
	48	3,755	Service 1	Eng/Korean	V	4(.418)	7/8	Arirang TV
	3	3,760	Now TV	English	H	26(.000)	7/8	
	4	3,760	Bloomberg	English	H	26(.000)	7/8	
	5	3,760	Indus TV	Hindi	H	26(.000)	7/8	
	6	3,760	IndusVision	Hindi	H	26(.000)	7/8	
	7	3,760	Muslim 1	Arabic	H	26(.000)	7/8	
	65	3,806	GXTV	Mandarin	V	4(.420)	3/4	Guangxi+3r
	66	3,813	Shaanxi TV	Mandarin	V	4(.420)	3/4	+2 radio
	88	3,820	Anhui TV	Mandarin	V	4(.420)	3/4	+2 radio
	70	3,827	Jiangsu TV	Mandarin	V	4(.420)	3/4	+3 radio
	72	3,834	HLJTV	Mandarin	V	4(.420)	3/4	HeiLong
	29	3,880	Abu Dhabi	Arabic	H	27(.500)	3/4	
	30	3,880	Qatar	Arabic	H	27(.500)	3/4	
	31	3,880	Syria	Arabic	H	27(.500)	3/4	
	32	3,880	Oman	Arabic	H	27(.500)	3/4	
	33	3,880	Sudan	Arabic	H	27(.500)	3/4	
	34	3,880	Libya	Arabic	H	27(.500)	3/4	
	35	3,880	AlManar	Arabic	H	27(.500)	3/4	
	36	3,880	Saudi 1	Arabic	H	27(.500)	3/4	+5 radio
		3,886	Dragon TV	Mandarin	V	4(.800)	3/4	Shanghai
		3,895	Shaandong	Mandarin	V	6(.813)	3/4	+6 radio
		3,914	Jilin TV	Mandarin	V	4(.420)	3/4	+1 radio
	17	3,920	461StarSprt	Eng/Mandar	H	26(.850)	7/8	
	18	3,920	462StarSprt	Eng/Mandar	H	26(.850)	7/8	
	R	3,960	CNN Radio	English	H	27(.500)	3/4	APID1122
	19	4,000	726Phoenix	Mandarin	H	26(.850)	7/8	InfoNews
	20	4,000	743Phoenix	Mandarin	H	26(.850)	7/8	
	21	4,000	Xing Kong	Mandarin	H	26(.850)	7/8	
	22	4,000	747Channel	Mandarin	H	26(.850)	7/8	Channel V
	51	4,020	Sahara Ent	Hindi	V	27(.250)	3/4	Manoran.
	52	4,020	Sahara Nat	Hindi	V	27(.250)	3/4	National
	53	4,020	SaharaNCR	Hindi	V	27(.250)	3/4	+1 radio
	54	4,020	SaharaMum	Hindi	V	27(.250)	3/4	Mumbai
	55	4,020	Sahara Up	Hindi?	V	27(.250)	3/4	UttarPrades
	56	4,020	Sahara Bint	Hindi?	V	27(.250)	3/4	
	57	4,020	Sahara Rajt	Hindi?	V	27(.250)	3/4	
	58	4,020	Sahara MP	Hindi?	V	27(.250)	3/4	MadhyaPra
(4,069?)	40	4,035	Hubei TV	Mandarin	H	4(.420)	3/4	+2 radio
	39	4,051	Sichuan TV	Mandarin	H	4(.420)	3/4	+1 radio
		4,067	Qinghai TV	Mandarin	H	4(.420)	3/4	+2 radio



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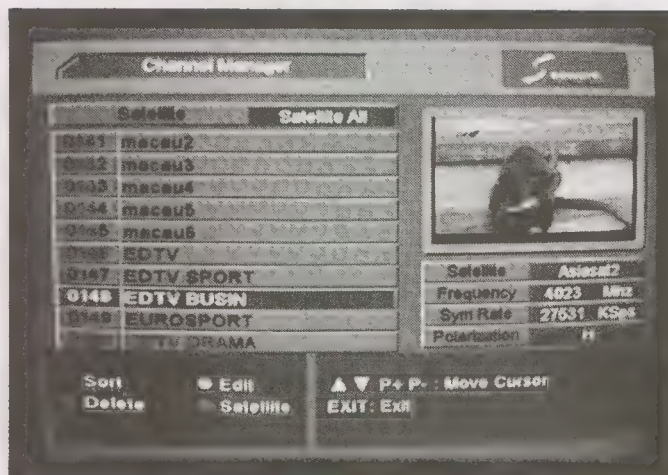
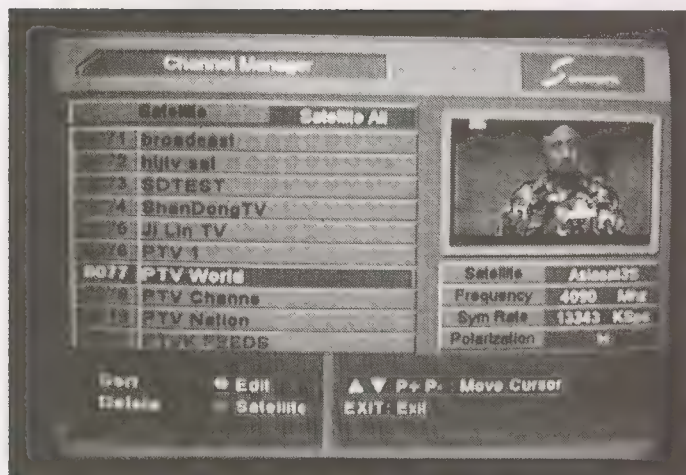
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Satellite	Our Mem #	Frequency	Service	Language	Polarity	Symbol Rate	FEC	Notes
(As3S)		4,082	Hunan TV	Mandarin	H	4(.420)	3/4	+1 radio
	77	4,090	PTV World	Pakistani	V	13(.333)	3/4	"PTV 1"
	78	4,090	PTV Chan	Pakistani	V	13(.333)	3/4	"3" +2 rad
	79	4,090	PTV Nation	Pakistani	V	13(.333)	3/4	"National"
		4,095	Sun TV	Mandarin	H	5(.555)	3/4	
	80	4,110	PTV Feeds	Pakistani	V	3(.335)	3/4	4,106
	43	4,113	TVB8	Cantonese	H	13(.650)	3/4	(13.671?)
	44	4,113	MATV	Eng/Canton	H	13(.650)	3/4	(13.671?)
	45	4,113	I-Horizon	Cantonese	H	13(.650)	3/4	(13.671?)
		4,115	Indus News	Hindi	V	3(.333)	3/4	+ "Plus"
	24	4,129	CCTV4	Mand/Eng	H	13(.240)	3/4	+6 radio
	25	4,129	CCTV9	Eng/Mand	H	13(.240)	3/4	
	26	4,129	CCTV feeds		H	13(.240)	3/4	
		4,140	Zee Music	English +	V	27(.500)	3/4	
		4,166	Henan TV	Mandarin	V	4(.420)	3/4	+4 radio
	81	4,180	Fujian SE	Mandarin	V	4(.420)	3/4	+2 radio
	83	4,187	Jiangxi TV	Mandarin	V	4(.420)	3/4	+2 radio
		4,194	LiaoningTV	Mandarin	V	4(.420)	3/4	+2 radio

Palapa C2M: 113E: 11 FTA TV channels plus 4 FTA radio channels

Satellite	Our Mem #	Frequency	Service	Language	Polarity	Symbol rate	FEC	Notes
Palapa C2M		3,473	RCTI	English +	H	8(.000)	3/4	marginal
		3,726	SCTV	Indo/Eng	V	6(.620)	3/4	marginal
		3,926	Bali TV	Indo/Eng	H	4(.208)	3/4	erratic svc
		4,055	ANTV	Indonesian	V	6(.510)	3/4	marginal
		4,074	Indosiar	Indonesian	V	6(.500)	3/4	marginal
		4,080	MTV Indo	Indonesian	H	28(.125)	3/4	erratic svc
		4,080	Metro TV	Indonesian	H	28(.125)	3/4	erratic svc
		4,080	TV5 Asie	French	H	28(.125)	3/4	erratic svc
		4,080	Al-Rahman	Indonesian	H	28(.125)	3/4	erratic svc
		4,080	MQTV	Indonesian	H	28(.125)	3/4	es/+4 radio
		4,184	TPI	Indo/Eng	H	28(.125)	3/4	erratic svc

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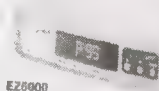
TF3000CIpro (Common Interface)
TF3000CIpro (Common Interface
with Built-in Positioner)
TF3030F (FTA)
TF3100Fei (FTA with Display)
TF3100FEPpro (FTA with Built-in
Positioner)
TF3200IR (*Irdeto embedded*)
TF4000PVR (Personal Video
Recorder 40GB)
TF5000PVR (PVR 80G)



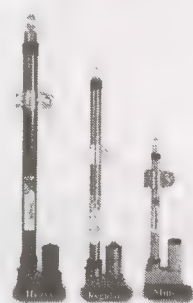
DG-120
DiSEqC H-H Mount

Positioner

EZ-2000
EZ-4000
EZ-6000
VBOX
VBOX II DiSEqC 1.2



Actuator
12" to 36"

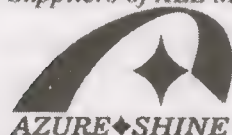


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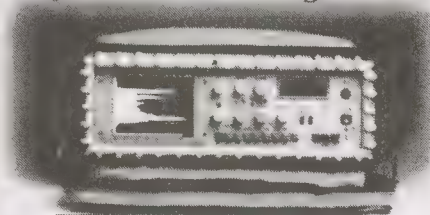
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JcSAT 2A: 154E. 1 FTA TV plus 23 language channels

Satellite	Our Mem #	Frequency	Service	Language	Polarity	Symbol rate	FEC	Notes
JcSat2A		3,915	BYU-TV	Eng + 23	V	4(.166)	3/4	or Sr 4.377

PAS-8: 169E. 29 FTA plus 37 radio channels

Note: Hz transponders universally available (Australia + NZ); Vt channels typically not available NZ.

Satellite	Our Mem #	Frequency	Service	Language	Polarity	Symbol rate	FEC	Notes
PAS-8	151	3,740	MTV China	Mand/Eng	H	27(.500)	2/3	(27.531?)
	153	3,829	CCTV4	Mand/Eng	H	13(.240)	3/4	+4 radio
	154	3,829	CCTV9	Eng/Mand	H	13(.240)	3/4	
	155	3,829	CCTV feeds		H	13(.240)	3/4	
		3,836	TVBS	Canton.	V	22(.000)	3/4	VERTICAL
		3,836	TVBS News	Canton.	V	22(.000)	3/4	VERTICAL
		3,836	TVBS Gold	Canton.	V	22(.000)	3/4	VERTICAL
		3,836	Much TV	Canton.	V	22(.000)	3/4	VERTICAL
		3,836	ERA News	Canton.	V	22(.000)	3/4	VERTICAL
		3,836	TVBS Asia	Canton	V	22(.000)	3/4	VERTICAL
		3,836	Azio TV	Canton.	V	22(.000)	3/4	VERTICAL
	156	3,860	CSN	Canton.	H	28(.000)	5/6	part day
	157	3,860	Pili Sat TV	Canton.	H	28(.000)	5/6	Ch 07
	158	3,860	SET Int	Canton.	H	28(.000)	5/6	Ch 08
	159	3,860	Da-Ai TV	Canton.	H	28(.000)	5/6	Ch 09
	160	3,860	CTI Int	Canton.	H	28(.000)	5/6	Ch 11
		3,860	Hwazan TV	Canton.	H	28(.000)	5/6	
	161	3,860	MAC TV	Canton	H	28(.000)	5/6	*
		3,880	MYX	Filipino	V	28(.700)	5/6	VERTICAL
		3,880	Knowledge	Filipino	V	28(.700)	5/6	VERTICAL
	162	3,900	Test Card		H	27(.500)	3/4	(CNBC)
	163	3,940	BBC World	English	H	27(.690)	7/8	Cal Bqt
	164	3,940	EWTN met	English	H	27(.690)	7/8	+2 radio
	165	3,940	ad hoc		H	27(.690)	7/8	feeds
	166	3,940	ad hoc		H	27(.690)	7/8	feeds
	167	3,940	P8 dcpu		H	27(.690)	7/8	PV updates
	168	3,940	P8 dcpu		H	27(.690)	7/8	PV updates
		4,020	** below		H	26(.470)	3/4	**
	170	4,060	NTSC Japn	Japanese	H	26(.470)	3/4	
	171	4,060	NTSC Eng	English	H	26(.470)	3/4	
	172	4,060	PAL Japn	Japanese	H	26(.470)	3/4	
	173	4,060	PAL Eng	English	H	26(.470)	3/4	

*/ PAS-8 3860Hz is unique containing 31 radio channels with incredible variety - from "Bird Songs" to "Happy Birthday" to Bossa Nova to 50-60 Popular Hit to Latin Dance. For a full list, see p. 28 here. These music channels are tape or disc fed without announcements or interruptions. Yes, they are FTA.

**/ PAS-8 4020Hz is ESPN will load as six video channels. On most IRDs, the audio (sound) is NOT encrypted although the video is (SA PowerVu).

Satellite	Our Mem #	Frequency	Service	Language	Polarity	Symbol Rate	FEC	Notes
(PAS-8)		4,121	Iglesia Cr	Filipino	V	4(.775)	3/4	VERTICAL
		4,121	Net 25	Filipino	V	4(.775)	3/4	VERTICAL
	174	4,180	ABC A-P	English	H	27(.500)	3/4	+ 2 radio
	175	4,180	ABC A-P	English	H	27(.500)	3/4	
	176	4,180	test card		H	27(.500)	3/4	interchange

PAS-2: 166E, 10 FTA TV (including feeds) plus X2 radio channels

PAS-2		3,744	BBC World	English	V	21(.800)	3/4	
		3,744	BBC World	English	V	21(.800)	3/4	
	177	3,771	Service 3	Korean	H	9(.041)	3/4	"YTN"
	178	3,901	ABC A-P	English	H	30(.800)	3/4	+1 radio
	179	3,901	CBS NY	English	H	30(.800)	3/4	feeds only
	180	3,901	Adhoc II		H	30(.800)	3/4	feeds only
	181	3,901	Bloomberg	English	H	30(.800)	3/4	+1 radio
	182	3,901	Adhoc III		H	30(.800)	3/4	
	183	3,901	feeds		H	30(.800)	3/4	
		3,992	Fox feeds		V	26(.470)	7/8	feeds x 5 ch

Intelsat 804: 176E, 1 FTA TV

Intel 804		3,874	TV Globo	Portuguese	RHC	6(.108)	3/4	west hemi
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FTA NZ + Australia: continues p. 28

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That's why we have made it our priority to give you all of the information to help you make your hobby a success. So if you are contemplating Satellite TV as a hobby, give us a call; we'll help get you off on the best track. Who knows - you might even become a part of this growing industry!! You can count on our decades of experience to provide you with the best "right" solution at an affordable price.

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TECHNICAL TOPIX

Concerning polarisation "shift" at your horizon

"Let us discuss polarity, for a moment. In SF#117, you mention receiving CONUS (continental USA) 'skewed' polarity, possibly due to a beam reflection off of a cross arm that causes 'scatter' in other polarities, and how horizontal can be turned into almost vertical. Clarke Orbit satellites are, by definition, clear aperture. Yet you seem to be suggesting there is 'something' in the way of the downlink pathway from satellite transmit antenna to the earth below; something causing the very strong signal that appears right at the transmit antenna to become repolarised to something quite different. Maybe, just maybe, what we know and have learned from and about terrestrial microwave (point to point at 4 GHz or below or above) might help comprehend what is happening here.

"In the long out-of-print C SD Anthology, you published sketches of various reflector types beyond the common prime focus and Cassegrain. At the time I was working for an American microwave firm, WTCI. Having fresh in my mind the CSD information, I paid special attention to the task I was assigned: 'Add an additional polarity feed to the bottom of a Gabriel Horn antenna'. This is a long columnar antenna not dissimilar in shape to a vegetable that is thin and compressed at the bottom-rear (the 'feed point') but flaring into a much wider open mouth 'horn' at the front. Anyone who has looked even casually at a 4 GHz terrestrial microwave site has to have noticed this unique antenna format suspended on the side of a four legged tower.

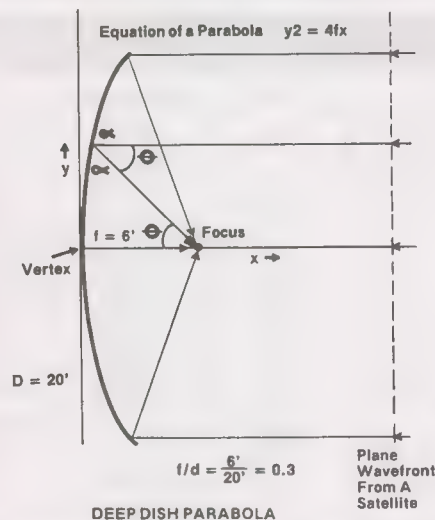
"A horn is the ultimate clear aperture reflector and produces the most precise of polarised waveforms, free of VSWR (standing waves). When I installed a '4 port feed' from manufacturer Andrew on one of these horns, it cost WCTI \$5,000 for the hardware but it produced 55 dB cross pole isolation (such as vertical to horizontal). Andrew did this using a carefully designed 'spiral staircase' series of resonant rods that inside of the horn slowly rotated the wave as it travelled down the inner surface of 'the tube.' This was accomplished at the 6 GHz range and then at 11 GHz - the two *terrestrial* microwave frequencies we were dealing with. The end result was a much higher isolation between poles, and, the in-phase 'pole' was much sharper as well.

"To really achieve a close-in differentiation of polarity, where the received difference is as you reported as close as 10 degrees, you might need to consider abandoning the prime focus or Cassegrain fed dishes in favour of a horn antenna.

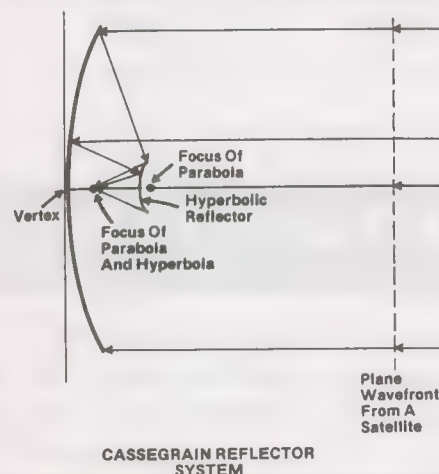
"With the demise of (commercial) long haul terrestrial microwave (it now having been replaced by satellite links), there are dozens - nay - hundreds of Andrew, Gabriel and even Western Union horns laying in fields all over the USA and elsewhere. I would also imagine that dB for dB, they would be less expensive to resurrect than larger size prime focus or Cassegrain dishes. The 'Horn' antenna may be your answer to closely spaced, polarisation shifted, signals."

Tim Alderman, Oakland, California

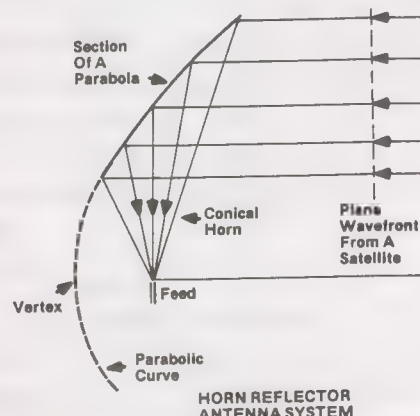
Comparison of Prime, Cassegrain, Horn



Deep dish parabola (f/d in 0.3 region) has prime focus focal point directly in front of "vertex" point.



Cassegrain reflector has subreflector at normal focal point, feed is on vertex line near dish surface.



Conical horn uses section of parabola (not unlike an offset dish) shaped to reflect satellite energy "down" to base of antenna where feed is positioned.

SatFACTS Pacific/Asian MPEG-2 Digital Watch: 15 June 2004

Bird	Service	RF/F & Polarity	# Program Channels	FEC	Msym
Thom3/78.5	SkyChAust	3695/1455H	up to 3	3/4	9,000
	Korean Central	3665/1485H	1	2/3	3,367
	TARBS ME mux	3640/1510H	12TV, 12 radio	2/3	28,066
	Ch Nepal	3626/1524V	1	3/4	15,556
	Mahar mux	3600/1550H	11TV, 1 rad	3/4	26,067
	SE Asia Mux	3569/1581H	2+ TV	3/4	12,500
	RR Sat mux	3551/1600H	8TV, 10 radio	3/4	13,333
	JAIN TV	3538/1612V	1TV	3/4	3,300
	PTV1 +	3521/1629V	1TV, 1 radio	3/4	3,333
	TARBS	3520/1630H	12TV, 12 radio	3/4	28,066
InSat 2E/83	TVK Cambodia	3448/1702H	1TV	1/2	6,312
	TARBS/Th5	3480/1670H	12 TV+radio	2/3	26,667
	KCTV/Korea	3424/1726H	1TV	3/4	3,366
	Thai Global	3425/1725V	up to 7?	2/3	27,500
	ETV mux	4005/1145V	6+ TV	3/4	27,000
	Hyd Dig 2E	3910/1240V	1	3/4	5,000
	Katran TV	3699/1451V	1	3/4	3,184
	Indian mux	3643/1507V	3	3/4	19,531
	ETV Mux#2	3485/1665V	4+TV	3/4	27,000
	Sky Bangla	3430/1720V	1TV	3/4	6,000
NSS6/95E	Free-X TV, plus	12,729V-Australia	5+TV	7/8	27,500
As2/100.5E	Euro Bougt	4000/1150H	6TV, 21r	3/4	28,125
	Reuters News	3905/1245H	1TV	3/4	4,000
	WorldNet	3880/1270H	4+28radio	1/2	20,400
	APTN Asia	3799/1351H	1	3/4	5,632
	Reuters/Sing.	3775/1375H	1	3/4	5,631
	Egypt/Nilesat	3640/1510H	7+, radio	3/4	27,850
	Macau MUX	4148/1002V	5TV	3/4	11,850
	Feeds	4086/1064V	1	3/4	5,632
	Dubai MUX	4020/11430V	4+, radio	3/4	27,500
	Fashion TV	3795/1355V	1	3/4	2,626
As3S/105.5E	3-ch miniMUX	3752/1398V	up to 3	3/4	5,640
	Saudi TV1	3660/1490V	7+tests	3/4	27,500
	Telstra I-Net	12,596V	no TV	5/6	30,000
	RR Mux	3669/1481V	up to 5 TV	3/4	13,333
	Zee bouquet	3700/1450V	10TV	3/4	27,500
	Ch News Asia	3706/1444H	1TV (+)	3/4	6,000
	BTV World	3725/1425V	1TV	3/4	4,450
	SAB TV	3743/2407V	1TV	3/4	3,300
	Arirang TV	3755/1395V	1	7/8	4,418
	New TV +	3760/1390H	up to 8TV	7/8	26,000
As2/100.5E	Star TV	3780/1370V	7+TV	3/4	28,100
	GXTV	3806/1344V	1TV + 3 radio	3/4	4,420
	Shaanxi TV	3813/1337V	1TV + 2 radio	3/4	4,420
	Anhui TV	3820/1330V	1TV + 2 radio	3/4	4,420
	Jiangsu TV	3827/1330V	1TV + 2 radio	3/4	4,420
	HLITV	3834/1316V	1TV	3/4	4,420
	Star TV	3840/1310H	7+ TV	7/8	26,850
	Star TV	3860/1290V	5+TV	3/4	27,500
	Abudhabi MUX	3880/1270H	8+TV, 2Radio	3/4	27,500
	Dragon TV	3886/1264V	1 TV	3/4	4,800
As2/100.5E	Shandong	3895/1255V	1TV + 6 radio	3/4	6,813
	Jilin TV	3914/1236V	1TV + 1 radio	3/4	4,420
	Star TV	3920/1230H	4+ TV	7/8	26,850
	Star TV	3940/1210V	6+TV	7/8	26,850
	CNN	3960/1190H	8+TV	3/4	27,500
	StarTV	3980/1170V	6+TV	3/4	28,100
	Star TV	4000/1150H	8+TV	7/8	26,850
	Sohara digital	4020/1130V	8TV	3/4	27,250
	Hubei TV	4035/1115H	1TV + 2 radio	3/4	4,420
	Sichuan TV	4051/1099H	1TV + 1 radio	3/4	4,420
As2/100.5E	Qinghai TV	4067/1083H	1TV + 2 radio	3/4	4,420
	Hunan TV	4082/1068H	1TV + 1 radio	3/4	4,420
	Pakistani TV	4091/1059V	4TV, 1 radio	3/4	13,333
	Sun TV	4095/1055H	1	3/4	5,554
	TVB8 Mux	4110/1040H	3	3/4	13,650
	Indus News	4115/1035V	1	3/4	3,222
	CCTV bqt	4129/1021H	4+ TV	3/4	13,240
	Zee Bqt #2	4140/1010V	8+ TV	3/4	27,500
	Henan TV	4166/984V	1TV + 4 radio	3/4	4,420
	Fujian TV	4180/970V	1TV + 2 radio	3/4	4,420
As2/100.5E	Jiangxi TV	4187/963V	1TV + 2 radio	3/4	4,420
	Liaoning TV	4194/956V	1TV + 2 radio	3/4	4,420
	Indovision (S-band)	2,535, 2,565, 2,595, 2,625, 2,655	33+ TV	7/8	20,000
	IndoBqt	3460/1690H	up to 6	3/4	28,000
	TPI	4185/965V	1	3/4	6,700
	TVE Asia-Africa	4160/990H	1	3/4	5,632
	Anteve	4144/1006V	1	3/4	6,510
	Indo Mux	4080/1070H	5+ TV	7/8	28,125
	Indostar	4074/1076V	1	3/4	6,500
	SCTV	4048/1102V	1	3/4	6,618
As2/100.5E	Indonesian Mux	4000/1250H	6+ TV	3/4	26,085
	Sateindo	3935/1215H	1	3/4	6,700
	Bali TV	3926/1224H	1	3/4	4,208
	Indo MUX	3880/1270H	3+ TV	7/8	28,121
	Global MUX	3760/1390H	up to 11 TV?	7/8	28,121

Receivers and Errata

CA (#1, 3); FTA audio #2 (dm)
Global footprint; changes 02/03.
CA + 2 FTA(A1TV, IRB3)
New 03/03; FTA
Thai + Indian services; FTA
MRTV3, MRTV (DM)
3TV, 5radio currently in use
PIDs 4132/4133
frequency change
Feeds to TARBS Australia and PAS-8
FTA
3FTA: TV5, VTV4, ATN Bangla
Not 24 hour; FTA?
FTA (reaches SE Australia)
Several ETV now here; wide beam
SCPC, OK E. Aust. wide beam
SCPC, OK E. Aust wide beam
corrections 12/02
Several new ETV here, Asia beam
New - November 2002
Require authentication: sales@bluekiss.biz, some fta
FTA TV + radio, TV5 Asia moved "down" April
Was 3923H; sometimes FTA
FTA; multiple audio services V2360, A2320
Sometimes FTA; also 3895V1
FTA & CA
Thru TARBS Aust, occ. FTA
5 chs TV, FTA, some tests
FTA SCPC feeds
FTA, sometimes includes sport
FTA as of May 1, 2003
Sun-TV, Surya TV, KTV (FTA)
FTA MCPC; Yemen, MBC EUROsport tests
Signal useful for dish testing - no TV
Bluekiss adult here; CA cards sales@bluekiss.biz
Mediaguard + Conax CA; 2 occ FTA
New September 2003; English + V1160, A1120
Bangladesh TV FTA started early March 2004
FTA SCPC; New PIDs V3601, A3606 June 2003
CA + NOW, B'berg, Indus Music, MTA FTA
NDS CA (Pace DVS211, Zenith)
Guangxi TV; was As2
Was As2
Was As2
Was As2
Was As2; HeiLong
NDS CA (Pace DVS211, Zenith)
NDS CA (Pace DVS211, Zenith)
New April 2004: link to Optus B3 Globecast
Shanghai
Apparently Mongolia; was As2
Was As2
Star Sports Asia (+), FTA NTSC; V512, A640 English
NDS CA as above; may NOT be operational
PowVu CA; new SR Apr 29; CNN radio FTA
NDS CA; Star News India FTA VPID 514, APID 648
NDS CA w/ 4(Chinese) FTA
New Sr September
Was As2
Was As2
Was As2
Was As2
new Sr, channels, Nov 2003
"History Channel" - SCPC
MATV Chinese movies FTA +CA; new Sr 05-04
Hindi (+ "Plus")
moved from 4115
Mediaguard (SECA) CA
Was As2
Was As2
Was As2
Was As2
NDS CA using RCA/Thomson,
Pace IRDs; 2,535 has 2 FTA
also 3586H/17,500, 3496H/19,615
FTA SCPAs NT/NC only
New August 2003
change from 4055V; FTA SCPC
Global TV - erratic new FEC 06/03
FTA (new 06-03); V2201, A2202
FTA SCPC; NT, New Caledonia only
unstable platform - not always there
test card - only - reported
FTA, may not be active full time
FTA; Sr change 01/03; erratic
frequent changes; often only test cards

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
	Brunei/Sing	3733/1417H	1TV	3/4	6(,000)
	RCTI	3473/1677H	2	3/4	8(,000)
As4/122E	STV mux	3880/1270H	8 or more	3/4	26(,500)
Jc3/128	Miracle Net	3996/1154V	3 up to 6	5/6	22(,000)
	Asian bgt	3960/1190V	up to 8	7/8	30(,000)
Jc2A 154	BYU-TV	3915/1245V	1+languages	3/4	4(,166)
MeasSs2	Astro Mux	11.602H	up to 17TV	3/4	41(,500)
	VTV MUX	11.522V	3 TV	3/4	9(766)
B3/152	Optus tests	12.407V	4+ TV, 4+ radio	2/3	30(,000)
	GlobeCast tests	12.501H	MultipleTV, radio	3/4	30(,800)
	GlobeCast tests	12.525V	8+ TV, radio	2/3	30(,000)
	Feed	12.550V	1TV	3/4	6(,666)
	Sydney Racing	12.564H	1+ TV	2/3	30(,000)
	GlobeCast Main	12.657V	8+ TV	2/3	30(,000)
	GlobeCast tests	12.720V	8+TV, radio	2/3	30(,000)
C1/156E	Optus testbed	12.290V/T1L	9tv, 24 radio	1/2 (*)	30(,000*)
	Optus test bed	12.324V/T1U	mixed	1/2 (*)	19(,530*)
	Unknown test bed	12.367V/T2	TV+	2/3	27(,800*)
	Aurora Biz	12.407V/T3	TV + radio	2/3	30(,000)
	Pay-TV	12.447V/T4	varying # TV services	3/4	27(,800)
	Unknown test bed	12.487V/T5	TV+	3/4	23(,333)
	Pay-TV	12.567V/T7	varying # TV services	3/4	27(,800)
	Pay-TV	12.607V/T8	varying #TV services	3/4	27(,800)
	Pay-TV	12.647V/T9	varying #TV services	3/4	27(,800)
	Austar	12.278H/T11	varying TV + data	3/4	30(,000)
	Pay-TV	12.358H/T12	varying #TV services	3/4	27(,800)
	Pay-TV	12.398H/T13	varying #tv services	3/4	27(,800)
	Pay-TV	12.438H/T14	varying #TV services	3/4	27(,800)
	Pay-TV	12.478H/T15	varying #TV services	3/4	27(,800)
	Pay-TV	12.518H/T16	varying #TV services	3/4	27(,800)
	Pay-TV	12.558H/T17	varying #TV srvicees	3/4	27(,800)
	Pay-TV	12.638H/T19	varying #TV services	3/4	27(,800)
B1/160	Occ. feeds	12.380H	1 TV - *	3/4	6(,111)
	Occ. feeds	12.384V	1 TV - *	3/4	6(,111)
	Net 7 service	12.397H	1	3/4	7(,200)
	Net Ten	12.353H	1TV + 1 radio	3/4	5(,100)
	Imparja mux	12.379H	2TV + 8 radio	3/4	5(,424)
	7 digital feeds	12.397H	1TV	3/4	7(,200)
	Feeds to NZ	12.411V	1 TV	3/4	6(,111)
	SBS Mux	12.420H	3+ TV, 2+ radio	5/6	12(,600)
	TVNZ DTH	12.456V	5+TV	3/4	22(,500)
	Nine Net	12.512H	1 TV typ.	3/4	5(,632)
	Sky NZ	12.519/546V	7TV/7TV	3/4	22(,500)
	Sky NZ	12.581/608V	6TV/6TV	3/4	22(,500)
	Sky NZ	12.644/671V	9TV	3/4	22(,500)
	ABC HDTV	12.603H	5TV	7/8	14(,300)
	Sky NZ	12.707/733V	8+TV	3/4	22(,500)
	Mix 106.3	12.574H	1 radio + data	3/4	1(,851)
P8/166	TARBS3	12.326H	13TV + radio	3/4	28(,066)
	TARBS	12.526H	13TV + radio	3/4	28(,066)
	TARBS2	12.606H	13TV + radio	3/4	28(,066)
	TARBS5	12.646H	testing	3/4	28(,066)
	TARBS4	12.726H	13TV + radio	3/4	28(,066)
	JEDI/TVB	12.686H	11+ TV	3/4	28(,126)
	ABC A-P	4180/970H	2TV, 2 radio	3/4	27(,500)
	Disney Pac	4140/1010H	typ 6 TV	5/6	28(,125)
	NHK Joho	4060/1090H	7TV, 1 radio	3/4	26(,470)
	FOX Mux	4040/1110V	up to 5TV	7/8	26(,470)
	NET +	4121/1029V	1 TV	3/4	4(,774)
	ESPN USA	4020/1130H	8+TV, data	3/4	26(,470)
	Discovery	3980/1170H	8 typ.	3/4	27(,690)
	CalBqt/Pas8	3940/1210H	up to 3+ FTA	7/8	27(,690)
	CNBC HK	3900/1250H	up to 7TV	3/4	27(,500)
	FilipinoMUX	3880/1270V	up to 8TV+radio	5/6	28(,694)
	TaiwanBgt	3860/1290H	12TV + 30 r	5/6	28(,000)
	CCTV Mux	3829/1321H	up to 4+ 1 radio	3/4	13(,240)
	TVBS-N	3836/1314V	1FTA, 4+ CA	3/4	22(,000)
	EMTV PNG	3808/1342V	1 + 2 radio	3/4	5(,632)
	CNNI	3780/1370H	3, up to 5 TV	3/4	25(,000)
	Discovery Asia	3764/1386V	Up to 6 TV	3/4	19(,850)
	MTV	3740/1410H	8	2/3	27(,500)
	ABS-CBN APT	3712/1438V	1	3/4	3(,712)
P2/169E	WA Mux Pr	12.281V	3+ TV, radio	2/3	27(,500)
	WA PowVu	12.673V	1TV, many radio	1/2	5(,000)
	NBN	4126/1024V	1TV	3/4	3(,075)
	TARBS	4090V/1060V	9TV + radio	3/4	21(,000)
	Feeds	4037/1113H	1+ TV	2/3	6(,620)
	Feeds	4027/1123H	1+TV	2/3	6(,620)
	Feeds	4023/1127V	1+TV	3/4	13(,328)
	Feeds	3966/1184V	1	2/3	6(,620)
	Feeds	3957/1193V	1	2/3	6(,620)
	Feeds	3929/1221V	1	3/4	10(,850)
	Feeds	3912/1238V	1	2/3	6(,620)
	Feeds	3898/1252V	1	2/3	12(,000)
	Middle East	3836/1314V	4 typ	3/4	13(,331)
	Anirang TV K.	3815/1335V	1TV	3/4	4(,400)
	Feeds	3803/1347V	1	3/4	6(,000)
	PAS/BBC mux	3744/1406V	3	3/4	21(,500)

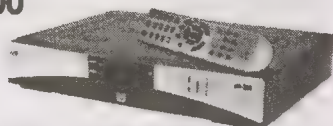
Receivers and Errata

FTA ; Singapore 23hrs. Brunei 1 hr, Brunei V1200
FTA SCPC; Australia, New Caledonia, some English
First TV mux to appear this new bird; erratic service

PowerVu; some FTA (Ch. 1 & 3)
CA & FTA NTSC: Japan, Taiwan
Erratic service; strong NZ & Australia
Aust East beam - 3 FTA + 14 CA
WA only? Skew path, intended Asia
now differs from 12.407 C1; **tune ch FTA**
Nat B beam; unusual parameters-wrong NIT
GlobeCast; frequent programming changes
Big Brother to Ten - May 04 (CA & FTA)
Competitor to TAB; FTA but not for long
GlobeCast "home" 1 February; temporary?
Testing - not fulltime - erratic (GlobeCast)
testing late May; * - may be temp #s; on and off
testing late May; * - may be temporary numbers
Tests; not always operational, NDS only? SBS.
NZ (90cm) + Australia (Only **svc left on NZ; C1**)
Australia NA only (leakage to Norfolk, New Cal)
Australia NA only (leakage); 9-Net x 3 widescreen
Australia NA only (leakage to Norfolk, New Cal)
Australia NA only (leakage to Norfolk, New Cal)
Australia NA; has unique NIT
CA, subscriptions available Australia, Norfolk
CA, subscriptions available Australia, Norfolk
CA, subscriptions available Australia, Norfolk
CA, subscriptions available Australia, Norfolk
CA, subscriptions available Australia, Norfolk
"Home" CA, subscription available Australia, Nrlk
CA, subscription available Australia, Norfolk

* - plus 12.451H, 12.460H
* - plus 12.293V, 12.402V, 12.411V
Full schedule less commercials - links; may be CA
Possibly feed to Tasmania?
PIDs vary; also try 12.360, 12.370
occ. digital feeds; typ fla
Often NTSC; USA-Australia-NZ
Also 12.420H same params; SBS HDTV + w-s
FTA 4 channels (TVNZ x 4); +Maori here
testing digital feeds; Sr may vary
NDS CA, subscription available NZ
NDS CA, subscription available NZ
NDS CA, subscription available NZ
also 12.626, 643, 670, 688, & 706H
NDS CA, subscriptions available NZ
Radio SCPC is "cover" for high speed data
TPG/EurodecMDS CA, **occ. FTA**
TPG/Eurodec MDS CA, **1 radio FTA**
TPG/Eurodec MDS CA
TPG/Eurodec MDS CA; **2 TV FTA**
TPG/Eurdec MDS CA
June 2002-Irdeto-2 CA
Dateline west; also east PAS2, 3901V
PowVu CA
PowVu CA & FTA; subscription available
was PAS-2, previously 3992V; **feeds FTA**
NET25 + FTA; new PIDS April '03; reload
PowVu CA; ch 11 DCP-CCP bootload; audio **FTA**
PowVu/CA (some audio FTA)
PowVu CA & FTA (EWIN +)
NDS CA (6 channels); one test card FTA
Myx FTA V1960, A1920 + radio FTA
Mixed FTA & CA; STCgone
PowVu FTA, replaces PAS-2 svc
Difficult because of CCTV cross pole
was As2; PowVu CA
PowerVu; some audio FTA
PowerVu; Asian MUX; new parameters Nov '03
8 **MTV China FTA** V289, A290; rest CA
24/7 English track 2 news; V4096, A4099 11-03
PowVu CA, WIN, ABC NT, SBS
PowVu CA, WA only - D9234; see p. 15 SF#117
May not be permanent; not available to NZ
Occ FTA (Chile +); BIG power reduction Nov.
Sporting feeds (occasional)
Sporting feeds from USA (occasional)
feeds to (USA) pay-TV
PowVu (FTA) occ feeds
PowVu (FTA) occ. feeds
PowVu (FTA) occ sport feeds
PowVu(FTA) occ. feeds
PowVu (FTA) occ. feeds
Irdeto 2 CA - **subscriptions avail; Strong Tech**
Switched from Anirang TV World to AW Korea
PowVu (FTA) occ sport feeds jnc. Japan BB
BBC, test card FTA, others nominally CA

homecast+ eM200



Digital Satellite Receiver with 2 x CI slots.
and Irdeto 2.09 CI cam.

SATELLITE

homecast+ eM320PVR



Satellite Receiver with Dual Tuner, firewire,
and 44 hours recording with Irdeto 2.09 CI cam.

homecast+ eM300PVR

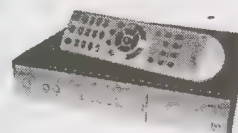


Satellite Receiver with CI slots & 22 hours
recording with Irdeto 2.09 CI cam.

homecast+ eM150IR



Compact embedded Irdeto
Satellite receiver with 1 card slot.

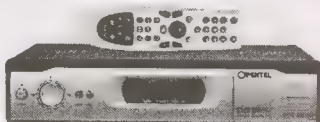


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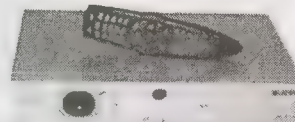
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- IRDETO 2.09 Embedded
- Symbol Rate Range from 2 - 45
- Suitable for LBC/AURORA
- Autoscanner Function (Unique to this receiver)
- **\$250 AUD**

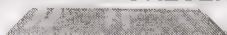
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(PRICE DROP)**



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- 2 CI slots
- User Friendly
- Symbol Rate from 2 - 45
- **\$370 AUD**

Supernet

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Light Duty
Medium Duty
Heavy duty available

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Price: \$160
We import this product

Suitable for all channels from Optus B3

Banking Details

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Branch 012432
Account 3474 57536

Bird	Service	RF/IF & Polarity	# Program Channels	FEC	Msym
(PAS2/169E)	Adventists.tv	4040/1010H	1	2/3	5(900)
	Feeds	3868/1182H	1	2/3	6(620)
	Feeds	3939/1211H	2 (typ NTSC)	2/3	6(620)/7(498)
	Cal PowVu	3901/1249H	up to 8	3/4	30(800)
	HK bouquet	3850/1300H	up to 8	2/3	24(900)
	Korean Bgt	3771/1379H	1	3/4	9(041)
1804/176E	iPSTAR	12.619H	1	2/3	25(220)
	Tests-NZ beam	12.646H	1	3/4	22(418)
	RFO Poly	4027/1123R	1TV	3/4	4(566)
1701/180E	TNTV	11.060&11.514	9	3/4	30(000)
	Canal+ Sat	11.610H	16TV, 1 radio	3/4	30(000)
	TVNZ	4195/955RHC	1	3/4	5(632)
	TVNZ/BBC	4186/964RHC	1	3/4	5(632)
	TVNZ	4178/972RHC	1	3/4	5(632)
	AFRTS DTS	4175/975L	3 TV, 3 radio	2/3	3(680)
	TVNZ/Aptn	4170/980RHC	1	3/4	5(632)
	TVNZ/feeds	4161/989RHC	1	3/4	5(632)
	RFO-Canal+	4086/1064L	4TV, radio	5/6	12(041)
	TVNZ/feeds	4052/1098RHC	1	3/4	5(632)
	TVNZ/feeds	4044/1106R	1	3/4	5(632)
	NZ Prime TV	4024/1126L	1	2/3	6(876)
	NBC to 7 Oz	3960/1190R	1	7/8	6(447)
	WorldNet	3886/1264R	1TV, 37 radio	3/4	25(000)
	Ionrama	3772/1378L	1	3/4	4(566)
	Feeds	3830/1320R	1	3/4	5(632)
	TVNZ	3846/1304R	1	3/4	5(632)
	NBA (Barker) Ch	3803/1347R	1	3/4	6(111)
	10 Australia	3769/1381R	4	7/8	20(000)
	USA feeds	3749/1401R	4?	?	26(400)
NSS-5/177W	Pacific IP Data	3745/1405R	none-date	3/4	44(995)

Receivers and Errata

New December 2003; 24/7 "Hope Chs."
FTA (occ sport); also try 3863, Sr6.100
FTA-tyr NTSC-occ sport, live Shuttle
PowVu CA + FTA (BBC gone)
was 4148Vt, some FTA
Korean MUX, reload 02/03
Tests, late May start; also 12.646H
Testing possible data links; June 2003
SE spot beam; was 4027LHC
east spot; 10TV + r each, vertical pol.
1+ FTA, MediaGd "2"; + 10.975 weaker
DMV/NTL early vers., occ feeds, typ ca
DMV/NTL early vers. occ feeds, typ ca
DMV/NTL early vers., occ feeds, typ ca
DTS Direct to Sailors; audio previously FTA - no more
DMV/NTL early vers. occ feeds, typ ca
DMV/NTL early vers., occ feeds, typ ca
east hemi 20.5 dBw +; new Sr
DMV/NTL early vers., occ feeds, typ ca
SCPC, mixed CA and FTA feeds
PowVu CA; Auckland net feeds
CA, Leitch encoded
New PIDs Dec 03 very strong NZ, Pacific
FTA SCPC; East Hemi Beam-Tahiti
Occ. feeds reprinted April 2004
SCPC, mixed CA & FTA, feeds
NBA feeds - probably CA - new Nov 2003
PowVu CA & TBN-JCTV FTA
16-QAM (not MPEG-2 compatible)
Data only but useful for dish alignment, top Sr check

MPEG-2 DVB Receivers: (Data here believed accurate; we assume no responsibility for correctness!)

Aston Simba 201. Embedded SECA (Zee, Canal +); review SF#97. MediaStar 61-2-9618-5777.
AV-COMM R3100. FTA, excellent sensitivity (review SF May 1998); new version Sept. '99. AV-COMM P/L, 61-2-9839-4377.
AV-COMM R3100(A). FTA, good sensitivity, ease of use exc (review SF May 2002). See above contact.
Benjamin DB6600-CI. FTA, Foxtel/Austar w/CAM+card. Autosat Pty Ltd 61-2-9642-0266 (review SF#72)
Coship 3188C. Review SF#107. Blind search FTA rcvr; works well. Available from Satlink NZ www.satlinknz.co.nz. (ONLY KNOWN DISTRIBUTOR IN WORLD)
Divitone: "Left-handed" review SF#115; does "code key" entry. Available <http://www.satmax.ws>
eMTech eM-100B (FTA), eM-200B (FTA + Cb2), eM210B (FTA + 2xCI + positioner); KanSat 61-7-5484 6246 (review SF#89)
Fortec Star Lifetime. Two versions, both blind search, code-key programmable, one X 2 CI. Review scheduled SF#119. www.aDigitalLife.com
Humax F1-CI. Primarily sold (originally) for TRT(Australia), does (limited) PowerVu (not Optus Aurora approved); not desirable.
Humax ICR1 5400 (Z). Embedded Irdeto + 2 CAM slots; initial units had NTSC glitch, now fixed. Widely available; new software avail 04-04, SF#76.
Humax ICR1 5410 (Z). Adaptable version capable of holding multi-CA systems (SF#98, 99). Widely available; original importer Sciteq (www.sciteq.com.au).
Hyundai-TV/COM. HSS100B/G (Pacific), HSS-100C (China) FTA. Different software versions; 2.28/2.27 good performers, 3.11 and those with Nokia tuners also good; later 5.0 not good. SATECH (V2.26)
Hyundai HSS700. FTA, PowerVu, SCPC/MCPC. Review SF March 1999. Kristal Electronics, 61-7-4788-8902.
Hyundai HSS800CI. FTA, Irdeto (with CAM) + other CA systems, PowerVu, NTSC. Kristal Electronics, above; review SF#63.
INNOVIA IDS3088. Review SF#111. Blind search FTA receiver. High quality IRD; available Phoenix Technologies, and Satmax (<http://www.satmax.ws>).
ID Digital CI-24 Sensor. New August 2003; new lower noise tuner, extra sensitivity; CI Interface slot Irdeto 1 & 2; review SF#108. Sciteq 61-8-9409-8677.
MediaStar D7. FTA, preloaded w/ known services, exc. software (review SF July 1998). MediaStar Comm. 61-2-9618-5777
MediaStar D7.5. New (May 00) single chip FTA; review June 00 SF. MediaStar Comm. Int. 61-2-9618-5777
MediaStar D10. FTA and Irdeto embedded CA. VG receiver; see review SF#98, August 2002. Contacts immediately above.
MultiChoice (UEC) 660. Essentially same as Australian 660, not grey market contrary to reports. Sciteq tel 61-8-9306-3738
Nokia "d-box" (V1.7X). European, FTA, may only be German language, capable of Dr. Overflow software. SF#95, p. 14.
Nokia 9200/9500. When equipped with proper software, does Aurora, originally did pay-TV services provided software has been "patched" with "Sandra" or similar program. See SF#95, p. 14, SF#96 p. 15. SatWorld 61-3-9773-9270 (www.satworld.com.au)
Pace DGT400/DVR500. Originally Galaxy (Now Foxtel+Austar). Irdeto, some FTA with difficulty (Foxtel Australia 1300-360818). UECs replaced; Sept 18 (2003) "drop-dead" day; all were to have been "turned off" on that date (in fact, those with V1.13 CAMs may still be working; still does radio including CA, not TV).
Pace "Worldbox" (DSR-620 in NZ). Non-DVB compliant NDS CA including Sky NZ, no FTA; similar "Zenith" version (see SF#115, p. 15).
Panasat 520/630/635. MCPC FTA, Irdeto capable, forerunner UEC 642, 660. Out of production, spares fax ++27-31-593-370. No longer works with Austar/Foxtel.
Panasonic TU-DS10. FTA + Irdeto CA; one of 2 IRDs approved by Optus for Aurora, but never available in Australia (SF has one - want it??? Collector's item!).
Phoenix 111, 222. PowVu capable, NTSC, graphics, ease of use. (111 review SF#57). SATECH (below)- 222; terminated
Phoenix 333. FTA SCPC, MCPC, analogue + dish mover. Detailed SF review SF#51. SATECH 61-3-9553-3399.
Pioneer TS4. Mediaguard CA (no FTA), embedded Msym, FEC, only for Canal+Satellite (AntenneCal + +887-43.81.56)
PowerVu (D9223, 9225, 9234). Non-DVB compliant MPEG-2 unless loaded with software through ESPN Boot Loader (see below). Primarily sold for proprietary CA (NHK, GWN+ PAS-2 Ku, CMT etc). For service only - call Scientific Atlanta 61-2-9452-3388. For revision model D9850, see Scientific Atlanta (below).
PowTek. Blind Search Chinese sourced, field tests rate it highly. Source jason@adigitalife.com
Prosat 2102S. FTA SCPC/MCPC, NTSC/PAL, SCART + RCA. Sciteq 61-8-9306-3738.
SatCruiser DSR-101. FTA SCPC/MCPC, PowVu, NTSC/PAL. (Skyvision Australia 61-3-9888-7491, Telsat 64-6-358-2749); no longer available.
SatCruiser DSR-201P. FTA SCPC/MCPC, PowVu, NTSC/PAL, analogue, positioner - (Skyvision - see above); no longer available.
SATWORK ST3618. Blind search FTA receiver. Fast search, problems, especially in "memory-filing" system; review SF#111. Available DMSi at jim@dmsiusa.com.
SATWORK ST3688. Blind search, 3000+ ch memory, multi-format RF modulator; improved version 3618. Review SF#113; available DMSi (above).
Scientific Atlanta D9223, D9234, D9225; Orig. PowerVu, superseded Dec 2003 by D9850. Commercial receiver, available TVO 61-2-9281-4481, John Martin
Strong Technologies SRT2620. SCPC, MCPC FTA, exc sensitivity, ease use, programming. Review SF#91 (ph. below).
Strong SRT 4600. SCPC, MCPC, PowerVu; exc graphics, ease of use, review SF#64. Strong Technologies 61-3-8795-7990.
Strong 4800. SCPC, MCPC, embedded Irdeto+ CAM slots, does code-key with additional software, Aurora. Strong Technologies 61-3-8795-7990.
Strong 4800 II. SCPC, MCPC CAM slots x 2 for Aurora +, Zee, Canal +, code key with additional software. Strong Technologies (above); review SF#103.
Strong 4890. SCPC, MCPC, 30Gb PVR, 2 CAM slots, DiSEqC 1.0, 1.2 (review SF#84), does code key with additional software; Strong Technologies, # above.
UEC Atlas/Titan (1000). New July 2003, replacing DGT400 for Austar. No SCART, L-band loop; also available Rural Electronics 61-2-6361 3636.
UEC642. Designed for Aurora (Irdeto), approved by Optus; w/new software, C-band FTA; faulty P/S. Norsat 61-8-9451-8300.
UEC660. Upgraded UEC642, used by Sky Racing Aust, Foxtel, limited FTA. (Nationwide - 61-7-3252-2947); P/S problems.
UEC700/720. Single chip Irdeto built-in design for Foxtel; unfriendly for FTA. Power supply problems, seldom sold to consumers; propensity to fall off back of trucks.
Winersat DigiBox 200. C + Ku basic receiver but includes Teletext for NZ TVOne, 2 VBI. Satlink NZ, fax 64-9-814-9447; long term teletext problems (loses TT).
Accessories:
Aurora smart cards. MYCRYPT (Irdeto V2) cards now available (Oct. 2003), Sciteq 61-8-9409-6677.
PowerVu Software Upgrade: PAS-8, 4020/1130Hz, Sr 26.470, 3/4; pgm ch 11 and follow instructions (do not leave early!)

WITH THE OBSERVERS

AT PRESS DEADLINE

Permanency for As4? CBN has been on-off FTA 3881H for months, now joined by Irdeto CA format 'OTV' service with 4 channels (news, music, arts, folk opera) which may mean regular service, finally, from satellite (122E); Sr 26.500, 3/4. B3 152E: 12.525V, add 'Suryan FM' new as of 2 June.

AM3/140E: "This is to advise that in 1st quarter 2005 (January-May) Russia will launch new C+Ku band AM3 to 140 E" (Andrew Kirillovich, Moscow, USSR).

AM11/96.5E: "In fact, (Russian) AM11 (not to be confused with American AMC11 or AMC10) is designated to stay at 96.5E although it is unlikely to turn-on any but northern facing footprints beams; formal turn-on is expected at the end of June. Our steerable Ku beam remains 'available' to an Australia user, however." (Andrew Kirillovich, RSCC, Moscow)

AMC11/146W: "Satellite should be testing from this position as you read these words; should move to 131W during July." (RB)

AsiaSat 3S/105.5E: "I-Horizon has replaced TVB8 on 4.110H" (Barney, PNG). "New Sr for TVB mux on this bird; 13.650." (Skippings, Australia) "Two new radio services 3880Hz, FTA, including Emarat FM (APID 1412) and Programme One (A1812)." (TK) "Tech TV (CA) on 3760H (within NOW TV bouquet) will shut-down permanently into Pacific/Asia on June 25. New owners of channel say they want to concentrate on gaining more subscribers inside USA, from which it originates (G4techTV)." (Gareth Welsby, Channel 8 Ltd., PNG). "This will shake you up in a casual scroll through FTA channels: BlueKiss and BlueKiss Express 3669V have been bouncing in and out of FTA" (Shakey).

AsiaSat 4/122E: "CBN, 3881Hz Sr 26.500, 3/4 comes and goes (V560, A563); back June 2 with 5 chs (4 CA)" (Junger).

Intelsat 701/180E: "Canal-Plus have added two new services (TF1, Planete Thalassa 10.975Hz while radio RMF is new on 11.610Hz" (Francis Kosmalski, NZ).

NSS6/95E: "ABC A-P appeared (briefly) on 12.673Vt, possibly a short term test, FTA; now gone." (Shanzy, HK)

Optus B1/160E: "False alarm. All Sky NZ transponders (save 12.706V and 12.733V) shut down for almost precisely



RAISING a ruckus. BlueKiss on AsiaSat 3S (3669Vt, Sr 13.333, 3/4 + NSS-6 [Ku]) is subject of Australian Government study to determine "who" operates it and "why" it might be "illegal" in Oz. Meanwhile in NZ - where this image was taken off screen. Who knows?? And I701 Canal + XXXL? Still cranking away!

an hour around 3:50AM on May 18th. Maintenance time on the dishes and hardware?" (CS, NZ)

Optus B3/152E: "12.550 Vt, Sr 6.666, 3/4 has been NTL encrypted feed (or FTA) of Australian feed for 'Big Brother' running at 8.3 MBit/s with two audio soundtracks. This is a feed for Australia's TEN Network. When this is running, 12.525V level is backed down as both occupy Tr5" (IF Qld). "12.525Vt, Globecast, Sr 30.000, 2/3 - doing a Network Load, it will not load TGN (Thailand) and Adhoc on DVB2000 Nokia but it will load on UEC 642; this Tr data stream has been very 'messy' for weeks, lots of uplink loading errors (No, the problem is *not* with your IRD!). The CTN (Cambodian) TV channel was a blank screen (17 May) with no audio and a constant 1 MBit/s data rate. T11 upper,

AMC10/exC4 found in American Samoa

"On a KiwiSat 7m fibreglas of questionable surface integrity, have located and measured significant signals from new-to-air AMC10 at 135W here at 14.16S/170.43W. These are vertical only at this time - will further check the horizontals: TR1/3720 AMC-12 dB; TR3/3760 Nickelodeon East-12 dB; TR5/3800 STARZ Encore-6 dB; TR7/3840 Bravo-11 dB; TR9/3880 QVC-14 dB; TR11/3920 Speed Channel-12 dB; TR13/ carrier only-10dB; TR17/MTV East-7 dB; TR19/C-SPAN-11 dB; TR21/Discovery East-11 dB, and, TR23/4160 VH1 East 10 dB."

Bill Hyman, Pago Pago, American Samoa

Editor's note: Also see p. 31 for our own 3m tests on AMC10; equally "promising."

WITH THE OBSERVERS: Reports of new programmers, changes in established programming sources are encouraged from readers throughout the Pacific and Asian regions. Information shared here is an important tool in our ever expanding satellite TV universe. Photos of yourself, your equipment or off-air photos taken from your TV screen are welcomed. TV screen photos: If PAL or SECAM, set camera to f3.5-f5 at 1/15th second with ASA 100 film; for NTSC, change shutter speed to 1/30th. Use no flash, set camera on tripod or hold steady.

Alternately submit any VHS speed, format reception directly to SatFACTS and we will photograph for you.

Deadline for July 15th issue: July 3 by mail or 5PM NZT July 5th if by fax to 64-9-406-1083 or Email

skyking@clear.net.nz.

Intelsat 1701: 180E. 9 FTA TV including feeds plus 9 radio channels

Satellite	Our Menu #	Frequency	Service	Language	Polarity	Symbol rate	FEC	Notes
1701		3,769	TBN	English	RHC	20(.000)	7/8	
		3,769	feeds		RHC	20(.000)	7/8	sports
		3,769	feeds		RHC	20(.000)	7/8	sport/nets
		3,769	JCTV	English	RHC	20(.000)	7/8	
		3,769	Church Ch	English	RHC	20(.000)	7/8	
		3,769	HRT	Hungarian	RHC	20(.000)	7/8	
	186	3,886	VOA/Wnet	English	RHC	25(.000)	3/4	+9 rad/lang
		4,086	RFO Tahiti	French/Ply	LHC	12(.041)	5/6	3m marginl
	196	4,178	TVNZ	feeds	RHC	5(.632)	3/4	"TVC3"

PAS-8 3860Hz (Sr28.000/FEC 5/6) radio/audio channels in normal loading sequence

(1) US popular new, (2) Music Master, (3) Sweet Love, (4) 50 & 60 Pop Hits, (5) R & B, (6) HipHop, (7) Rapid Tempo, (8) Jazz Vocal, (9) Jazz Main Stream, (10) Italian Pops, (11) Latin Dance, (12) Enka, (13) Japanese Hits, (14) BGM, (15) Bossa Nova, (16) BGM Classical, (17) Piano Easy Listening, (18) BGM, (19) BGM, (20) Bird Humming, (21) Taiwanese Pop, (22) Chinese Best, (23) Chinese Soft, (24) Chinese Classical, (25) Children's Music, (26) Soft Lounge, (27) Birthday, (28) Wedding, (29) KFC, (30) Pop, (31) KFC

12.460 Hz, Sr 6.670, 3/4 has been GWN's 'News Backhaul LBR' in SCPC which was previously HDTV (running at 8.3 MBit/s) but reduced to 3.2 MBit/s. On Nokia DVB2000, video was still frame graphic of weather forecast for WA. T11, lower: 12.425Hz, continues to be a mystery. Bandwidth

of signal is around 25 MHz, Monday to Friday it is too weak on my dish to load but on weekends it is as strong as normal Aurora signal. The Nokia or a Satwork will not load it. Globecast has had 'Daystar' on and off (12.501H, Sr 30.000, 3/4) and also same on 12.525V (30.000, 2/3) where it is

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Tauranga TV Svcs Ltd, western Bay of Plenty (ethnic Ku packages) (Ph 07 578 7276; dave-tts@clear.net.nz) (*)
Frontline Electronics, Mosgiel region (ethnic Ku packages) (Ph 03 489 4001)
Advanced Aerials, Napier/Hawkes Bay, comcls (Ph 06835 6618/021 272 6618; advanceaerials@xtra.co.nz) (*)
Nelson TV & Video Svcs, all Nelson Bays (Ph 03 548 0304; ntv@tasman.net)
Rexels AV Electronics Ltd, Palmerston N, Manawatu, Hawke's Bay, Wanganui (Ph 06 357 6186; rblair@infogen.net.nz) (*)
Quality Pics, entire Waikaito region (Ph 0800 007 667; maxnkay@xtra.co.nz)
Smartzone, Wellington-Wairarapa-Palmerston N (C+Ku) (Ph 029 289 6333; info@smartzonesystems.co.nz) (*)
Homestead HiTech, Wellington, Masteron-Levin (PAS-2, B1, B3) (fitzgera@ihug.co.nz) (*)
Waipu Cable Television, Wellsford to North Cape, (Ph 09 4320 973; waipucable@xtra.co.nz) (*)
John Stewart, southland including Otago (john.s@tritec.co.nz)

New South Wales:

Woolgoola Antenna Service, Coffs Harbour (50km radius) (Ph 0266561889; woopaerials@iprimus.com.au) (*)
Town & Country Antennas, 60km radius Murwillumbra/Tweeds Heads (Ph 02 6672 8595) (*)
Newcastle Satellite, Newcastle + Lwr Hunter Vly (Ph 0249614449; satellites@netcentral.com.au) (*)
Home Satellite TV, 40km radius Port Macquarie (Ph 02 6584 3838; kazbah25@optusnet.com.au)
Goodcom Communications P/L, 100km radius of Walcha (Ph 02 6777 1044; goodcom@northnet.com.au)

Victoria:

Riviera Satellite Antenna Svcs, 100km radius Bairnsdale (Ph 03 5152 4884; gillhooleystv@net-tech.com.au) (*)
Geoff's Communications, 60km radius Korumburra (Ph 0408 582010; qwyhoon@tpg.com.au)
Foreign Satellite TVP/L, Melbourne (region) C+Ku since 1995 (Ph 040445509; joe12@dodo.com.au) (*)

Queensland:

Phil's Antenna Systems, 100km radius of Hervey Bay (C+Ku since 1996). (Ph 0741 256 273)

To be listed here, tell us: 1/name of your business or your name, 2/ your home town and radius-distance covered from same, 3/ your telco, 4/ your e-mail. Send to skyking@clear.net.nz, or fax to ++64 9 406 1083 or mail to SatFACTS, PO Box 330, Mangonui, Far North, NZ. No, there is *no charge* to be listed.

(* - NEW or modified this month.)

mostly a test card." (IF, Qld) "Correction: Globecast 12.501H (Sr 30.000) FEC is 3/4, not 1/2 as in Digital Watch." (Sammy K).

Optus C1/156E: "T1 centre frequency is 12.305V, 72 MHz wide. Two MCPC here - currently 12.292V (Sr 30.000, 1/2) and 12.325V (Sr 19.530, 1/2). Signal quality (on UEC) is 72% whereas on 12.407V (which is on Aust/Nz beam) quality is 80% while Foxtel Trs average 96%. 'Power backoff' to allow two Trs to 'share' the same transponder is a killer." (AI, NSW)

PanAmSat PAS2/169E: "NBN World testing 4126V, FTA, Sr 3.075, 3/4" (DS). "The Hope Channel + LifeTalk Radio continue on 4020/4022H, Sr 5.900, 2/3 after abandoning 4040H" (AH).

Soapbox: "What's the deal here? I had a telephone call offering me Sky NZ for NO installation fee, free first month, if I agreed to a 12 month contract; from a Telemarketing firm (pointedly, not Sky itself). The next day, a second call from Sky itself offering me Sky satellite digital for \$49 installation, free first month, and permission to cancel after 28 days. So what is the REAL deal? I called Sky back to ask questions and talked to two different people in their marketing department - one verified the \$49 install, the second insisted it was \$99.95 minimum (free first month for all channels, 12 month contract). Has Sky lost control of its marketing programs?" (David L, NZ). "Zee TV Mux code entry changed - again - around May 10th. Those who updated late in April were forced to do it - again- ten days or so later." (H, NZ). "Vanuatu satellite pioneer Andrew Harrison has been charged as an Australian citizen as operating a satellite TV business without a proper license. The issue seems to revolve around whether Harrison goes beyond selling C and Ku band

reception systems - such as participating in the buyer/user's decisions regarding which channels he will view. The legal action apparently was fomented by local business folks who are competitors to Harrison's Video Ezzy business." (C. Sutton, NZ). (Editor's note: Harrison is a pioneer in TVRO in Vanuatu and has long been at odds with the local French-origin competitors. Our analysis of this "legal" challenge is that it is local politics, run amuck.) "In case you pondered what ever happened to the Australian Government's digital TV Mentor, Senator Richard Alston, he is now 'Professor of Information Technology' for Queensland's Bond University. I rest my case concerning political payoffs!" (IF, Qld). "Tim Alderman's article concerning installation of satellite plus DVB-T in California was very educational and a good read. The article does not preach ('do it this way only!'), rather it is a well written account of how he did a difficult installation. We need more of these as we all learn from this sort of material. Why do I recall Tim's name - cannot place it exactly?" (NS, NSW) (Editor's note: Tim has contributed to SF in the past - during years two and three of this publication.) "Does anyone know if the C1 satellite has a Ka band beacon on board? This was included on the B series of satellites (28 GHz Vt and Hz) for propagation tests." (AI) "Japan's NTT Docomo and KDDI Corp have unveiled a mobile cellphone device that is capable of receiving DVB-T (terrestrial digital). The 140 gram (!) handset's battery will provide around 2 hours of continuous DVB-T reception; shutting down when the battery approaches a point where the cellphone's more normal functions would also quit thus preserving telephone operation in the event somebody neglects to turn it off while watching TV!" (Jeremy, Tokyo) "New ChinaStar2 bird apparently will semi-co-locate at 88E

with ChinaStar 1 (87.5E); some info www.chinastar.com.cn/English." (David Leach, Aust) "While swap-over date for US analogue TV to digital-only still open-ended, a new proposal will allow two-way radio and unlicensed short range equipment to share any locally unused TV channels on a region by region basis; primary beneficiary if it happens will be WiFi like services." (DM, California) "There is confusion with the two MCPCs previously labelled 'Aurora Testbed' are running again (June 2) but not programme loaded. They are: T1 Lower 12.292V, Sr 30.000, 1/2 and T1 Upper 12.325V, Sr 19.540, 1/2. The NIT on both has been incorrect (it said 12.369V, 28.199, 1/2 with a satellite label of 1640). They are both about the same signal level as Aurora's 12.407V (Sr 30.000, 2/3) which suggests T1L and U are on Australia + NZ footprint - which I doubt.(IF, Qld) "USB to COM port device for the Dreambox will run up to 10 smartcards simultaneously; 2 with standard cardreaders and 8 in Phoenix type cardreaders. Drivers for the Dreambox are available; price is 198 Euro." (info@dream-multimedia.co.za) "Foxtel has shot themselves in the foot - again! Analogue satellite subscribers received a full printed guide, newer digital subs get a 'highlights only' version with instructions to go to the EPG. The on screen version is many things but one it is not is helpful beyond a 7-day advance period. So when you miss a movie showing and want to look ahead to the end of the month, you cannot do so to find a rerun time. I also find the EPG 'clunky' as in slow, and difficult to use. I tried to check out just the movies on Showtime for one 24 hour period - required 20 clicks of the side arrow button plus 14 more clicks to read any movie detail and then 14 back clicks to return to the EPG. And that was just one channel for one day! I am no longer able to 'look ahead' and plan my viewing properly and for this reason alone I rate the Foxtel EPG second rate and not nearly as useful as the printed guide. Which, by the way, even when I offered to pay for it, Foxtel refused to allow me to order!" (AS) "It won't be cheap! Reference previous SF reports covering the proposed Shin Satellite service through Telecom NZ for remote users of Internet - (NZ)\$2,000 per month for 1 MBit/s link after an initial investment of (NZ)\$1,000 for the hardware." (Joseph, Auckland) "TARBS numbers keep 'refining'. Reports in Australian media say TARBS now claims 75,000 subscribers (A\$60p/m) in home country, an additional 2,000 'overseas.' They also claim 'growth of over 20,000 in past 12 months' due primarily to addition of English language channels (i.e. MTV, The Movie Network [3 channels], CNN) which

TARBS claims 'appeals to second and third generation immigrants'. TARBS has fought the not so fine line between first generation immigrants (or those in second or even third who have not adopted Australian-English as their 'first language') and those immigrants who are totally comfortable with English but who consider their home-country language to be a backup of 'filler' to maintain the strength of the ethnic 'roots.' TARBS now claims to be '15,000 subscribers away from break even' but late in 2001, they were 'promising to reach 275,000 subscribers by mid 2003. They did not. Currently, TARBS is in yet another battle - this one with Foxtel which demands A\$750,000 per year from TARBS for each of their ethnic channels carried. TARBS believes these charges out of reach, making it unable to reach ethnic cable subscribers. Of interest - at \$750,000 per year, TARBS would have to acquire 1041 new subscribers (paying \$720 per year each) per ethnic channel to break even on a cash flow basis. TARBS in April said it plans to spend \$10,000,000 in a promotional campaign involving door to door sales and local immigrant community promotions to raise its level of takeup." (Charles E., Sydney) "Many of Canada's estimated 750,000 homes who watch grey market USA television through satellite dish systems procured in the US are forming a coalition to fight the Canadian government's decision. At risk, ethnic programming from Portugal, Russia and throughout the world, available only through US sources and not available via Canadian satellite TV, will be forever lost." (Gargan, Montreal) "After spending A\$15,000,000 in a blitz advertising promotion, Foxtel apparently has attracted 63,000 new 'digital' subscribers (primarily for the cable service) and has agreement from 187,000 existing subscribers to 'switch' from 'analogue' (see SF#117, p. 2). They expect, by mid-year 2006, to have converted all existing (cable and satellite) subscribers to their respective 'digital' platforms. After a slow installation start averaging 5,000 homes per week in March-early April, Foxtel now claims 13,000 new installs plus conversions per week. However, the math here seems uncertain as many would-be conversion subscribers report they have been given 'installation dates' as far away as December 2005 - 18 months out. For that to work, at 13,000 per week as Foxtel now claims, in the next 18 months the firm would install 1,014,000 new digital systems by the end of 2005. Why anyone signing up now would be forced to wait until December 2005 to have their system completed seems very strange. The most obvious answer is Foxtel is not reaching 13,000 per week at this time - even at 5,000 per week claimed for March would have nearly 400,000 installed by the end of 2005." (AR, Sydney) "A California court has ruled that '321 Studios' DVD copying software is illegal. The firm has sold more than a million copies of the software that allows users to copy a purchased DVD to a hard drive or to a blank DVD disc." (Benjamin, US) "It was 59 years ago today (May 25, 1945) that I wrote my COMSAT Memo describing 'Extra-Terrestrial Relays' as later published in (October 1945) Wireless World." (Sir Arthur C. Clarke, Sri Lanka) "B3 Tr13 12.563H (high performance beam) "TVN/Sydney Racing Television remains FTA (Sr 30.000, 2/3) but on-screen says (Irdeto V-2) CA coming. Contact is 1300 139 408 (www.TVN.com.au)." (HorseFan) "Globecast's 12.525V 'The God Channel' is off, running rapidly, 'Test for God Channel is completed-contact +91-44-2628-3737 if you wish it to continue'. 'SUN TV still only test card." (IF, Qld)

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Sign-off

We have AMC10!

Make a list of the top-three things you would like to accomplish in TVRO. Would direct reception from American satellites be included? We have already reported marginal success with Galaxy 13/127W (SF#117, p. 8) which pointed us towards a 7m dish for full glitch-free reception from services such as STARZ! Movies. But on May 5th RCA's new corporate entity, known as SES Americom, replaced old and tired C4 at 135W with a new and unusual C-band bird called AMC10 (companion AMC11 will go to 131W by perhaps July; now testing at 146W). SatFACTS published, exclusively again, details of the new AMC series of birds including their proposed footprints in issue #115. When C4 sat at 135W, we "tested" for it with a "tiny" 3m dish and found very weak (but perceptible) signals. We found several carriers, none strong enough to produce watchable images, from C4. But hold on - with C4 being replaced with AMC10, and, AMC10 having a very unusual mid-to-western Pacific footprint (as shown on the front cover of SF#115), AMC10 looked promising.

On May 26, after a bad weather spell that ruled out rechecking for the AMC10 new signals from 135W, we found significant 3m class signals from AMC10. Bottom line? AMC10 will work into New Zealand but of course not with a 3m dish (a 5 or 6m will work, however).

Signals peak (are best) with a LNB polarity position of 30 degrees - true vertical would be 0 degrees so our peak signals were found to the right, clockwise, at around 1:30 on a clock face. Not all of the AMC10 transponders were identifiable but in our case our elevation (22.35) and azimuth (65.68 degrees) is spot on. Note in the list (below) 3 of the signals started off as horizontal but end up in NZ as best at 30 degrees "right" of true vertical. A 3m test antenna is enough to detect or identify the signals but not enough to watch even

Channels we found - first look May 26

RF Freq	IF Freq	Polarity	Service	Dish Size
3,720	1,430	V	AMC (a)	7m
3,760	1,390	V	NickE(a)	7m
3,840	1,310	V	Bravo(a)	7m
3,880	1,270	V	QVC(a)	7m
3,900	1,250	H	HSN(a)	6m
3,920	1,230	V	Speed(a)	9m
3,980	1,180	H	Disc(d)	8m
4,020	1,130	H	HITS(d)	9m
4,120	1,030	V	DiscE(d)	10m
4,140	1,010	H	Flix(a)	10m
4,160	990	V	VH1E(a)	10m



WE have AMC10! John (above), the .01 degree antenna elevation and azimuth change artist signals success while Gary (below) who specialises in PSA37-D spectrum analyser recognition of weak signals at SatFACTS shows similar enthusiasm.



those that are strongest (Discovery on 3980 RF, AMC on 3720 RF). In the table here, the right hand column ("Dish Size") reflects our calculated minimum dish size for fault-free lock (although a smaller dish might provide P3 analogue [a] or occasional digital [d] lock).

So what does this mean? That AMC10 at 135W is worthwhile in the Pacific; just as SF#115 forecast. Privately, we have encouraged those further north (New Caledonia, Marshalls, Nauru) to have a serious look at 135W. Note that QVC (3880/1270) and HSN (3900/1250) are FTA analogue so your own testing will not require anything more sophisticated than a retired-from-service "old fashioned" receiver (yes, a Palcom 7700 or 7900 with threshold extension would be best but even an old Winersat with front panel adjustable video bandwidth will work in this application). So - in American Samoa where Galaxy at 127W was first found - or next door in Western Samoa - or even Fiji; can you find usable signals? *You* won't know until *you* look! And *we* won't know until *you* report to SatFACTS!!

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- ☐ **UHF 20' Parabolic:** For a few hundred dollars in materials at the local lumber yard, you can build a 20+ dB gain UHF parabolic capable of providing "scatter region" reception to 300km! \$15 all regions.
 - ☐ **Surface Wave 40+ element "yagi" format single channel antennas.** Stack 'em! Designed by the legendary Oliver Swan, this is the biggest, highest gain single channel VHF-UHF antenna ever created. Oliver routinely used them for 600km reception. Not for careless folks. \$10 all regions.
 - ☐ **Tech Bulletin 9402: MATV (master antenna terrestrial) systems** - wiring up a home, motel, hotel, camp grounds from one set of antennas - \$15 all regions.
 - ☐ **Tech Bulletin 9404: Home Satellite Dish Systems.** "Newbie" trying to work out what all of those funny terms mean and how a home system goes together? Perfect. \$15 all regions.
 - ☐ **Tech Bulletin 9405: Satellite to Room Systems.** Combining MATV (TB 9402) with satellite (TB 9404) to distribute satellite TV to multiple outlets - 2 to 1000+! \$15 all regions.
 - ☐ **TB9301: Terrestrial Antenna Systems** to eliminate co-channel interference, stack for additional gain. \$15 all regions.
 - ☐ **TB9302: (Terrestrial) Weak Signal Techniques;** off air reception to 300km+ using conventionally available equipment. Seriously detailed. \$15 all regions.
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 - ☐ **TB9305: Cable TV** - the basics. How a cable system works, how to build one! \$15 all regions.
 - ☐ **Nelson Parabolic Manual.** Step by step allows you to build satellite dishes with high accuracy to 13' - 4m diameter. Nelson was the very best and his techniques have stood the test of time. \$15 all regions.
- SOFT CORE - recent back issues of SatFACTS (while supply lasts)**
- ☐ **SF#93 (May 2002). European Piracy,** hundreds of web sites detailed - \$10 all regions
 - ☐ **SF#96 (August 2002). Nokia BDM;** faster channel zapping. \$10 all regions.
 - ☐ **SF#97 (September 2002). Turning FatCAMS into Multicams.** \$10 all regions.
 - ☐ **SF#100 (December 2002). d-box2 BIG report.** AC3 surround sound. \$10 all regions.
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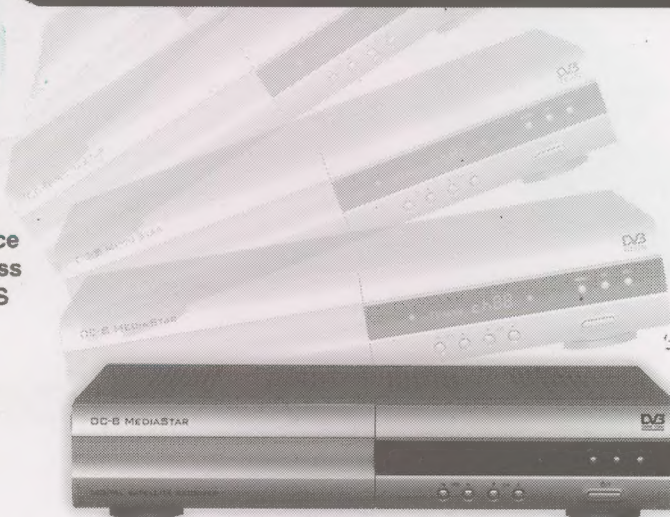
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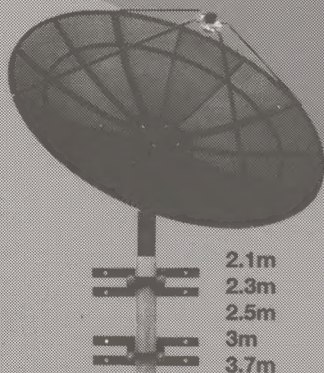
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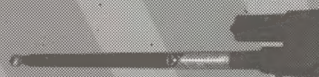


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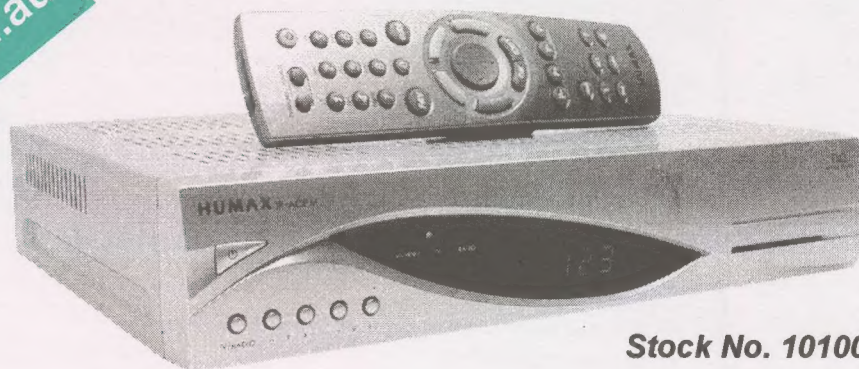
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